ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

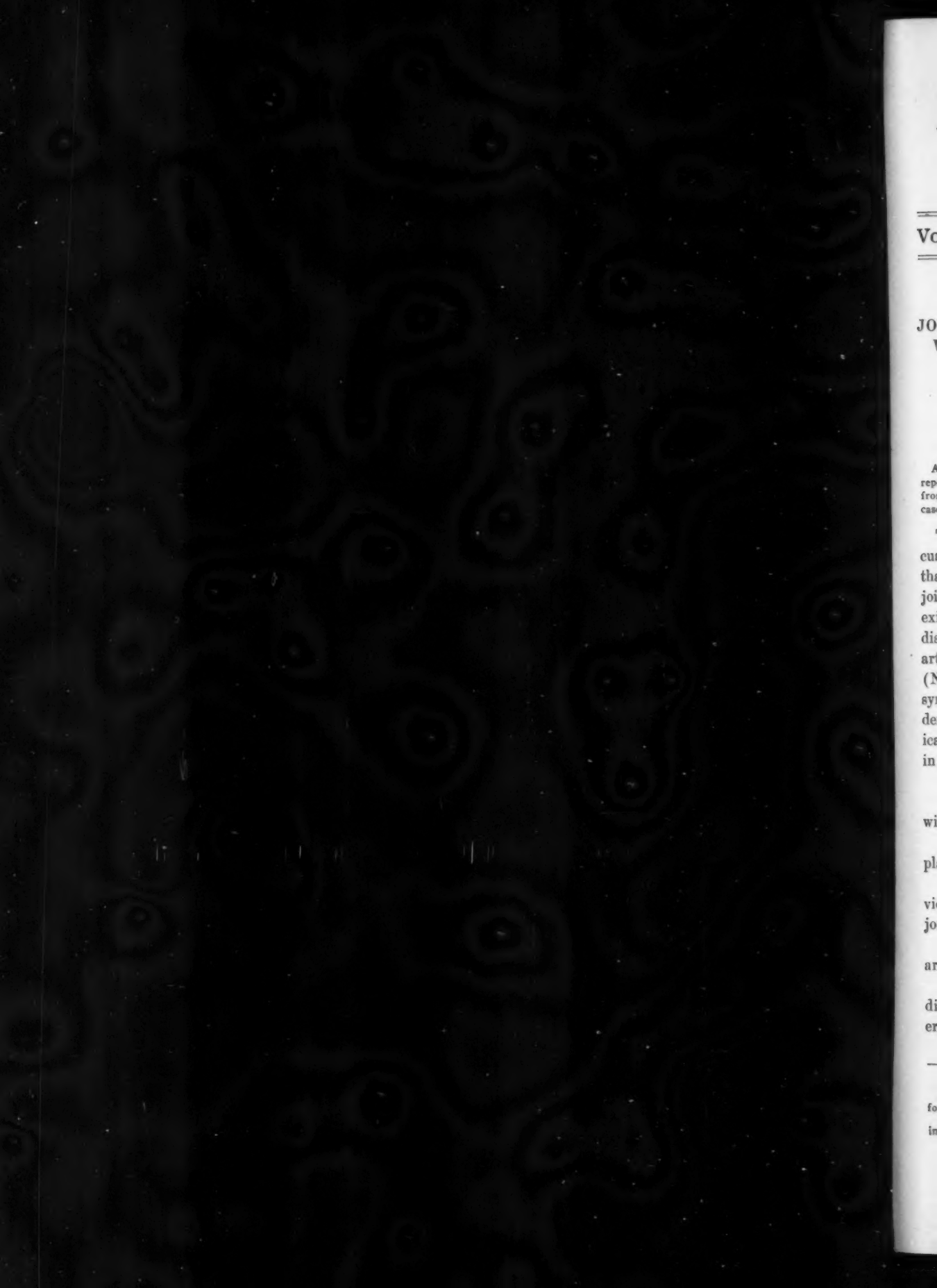
The Illinois State Medical Society

PUBLISHED AT CHICAGO, ILL.

CLYDE D. PENCE, M. D., Editor
HENRY G. OHLS, M. D., Managing Editor

INDEX TO VOLUME XXVII

JANUARY TO JUNE, 1915



ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

THE ILLINOIS STATE MEDICAL SOCIETY

VOL. XXVII CHICAGO, ILL., JANUARY, 1915 NO. 1

Original Articles

JOINT-BODIES FROM WITHIN AND FROM WITHOUT PRESENT IN ARTICULATIONS OTHERWISE APPARENTLY NORMAL.*

Condensed.†

AIMÉ PAUL HEINECK, M. D.,

CHICAGO, ILL.

An analytical review of all cases of joint-bodies originally reported in the English, French and German medical literature from 1890 to 1913, inclusive, and a few unpublished personal cases.‡

The articular bodies which we propose to discuss were unassociated with joint lesions other than those determined by the presence of the joint-body or by the violence responsible for its existence. Joint-bodies due to local articular disease (Tuberculosis,[1] gonorrhea, suppurative arthritis,[2] etc.), secondary to systemic disease (Nervous arthropathies, tabes dorsalis, etc.); symptomatic of mono-or polyarticular arthritis deformans, constitute other chapters of pathological anatomy and, therefore, are not considered in this contribution.

We therefore eliminated:

1. Cases reported with insufficient data or with only unimportant details.

2. Supposed or true cases of fragmented, displaced or detached semilunar cartilage.[3]

3. Cases of extra-articular bodies which previous to operation had been mistaken for cases of joint-bodies-Schmieden.[4]

4. Cases of extra-articular bodies of intra-articular origin.[5]

5. Cases of joint-body lodged in joint-capsule diverticula, communicating, or not, with the general synovial cavity.[6]

6. Cases of a nature so distinct from that of the joint-bodies herein considered that their inclusion would serve no useful purpose, would needlessly confuse the reader (Pedunculated chondro-sarcomata,[7] etc.).

7. Cases in which pre-existing or co-existing disease of the articulation can be considered a contributory etiological factor (gonorrheal,[8] suppurative arthritis[2]).

9. Cases of extra-articular bodies reported as cases of intra-articular bodies.[10]

Primary joint-bodies admit of the following classification, viz.:

1. Joint-bodies originating outside of the organism.

2. Joint-bodies originating within the organism.

JOINT-BODIES ORIGINATING OUTSIDE OF THE ORGANISM.

These bodies, totally foreign to the organism, penetrate into the articular cavity by way of punctured, gunshot, or other wounds of the skin and other overlying peri-articular tissues. They presuppose a wound of the articular capsule. They are of different nature; phonograph pin,[13] a piece of handrail made of wire-rope,[14] a sewing needle,[15] part or whole, and very frequently a bullet.

We have been able to collect fifteen cases of joint-bodies originating without the organism: Three of the patients were females, eleven were males; in one, the sex is not stated. The youngest patients were 3.5, 6 and 7 years old respectively. The oldest one was sixty-one years old.

These bodies may be single, or multiple; mobile, or immobile; may be encysted, and may be impacted.

To aid in the diagnosis of bodies of this type, we have, almost always, the history of an injury plus the scar of the entrance wound. This always obtains in cases of projectiles.[17, 18, 19, 20]

At times, the history is indefinite and insuffi-

*Read before the Chicago Academy of Surgery, May, 1914.
†Author's reprints include complete article.
‡All the English, French and German publications to be found in the John Crerar Library, Chicago, Illinois, U. S. A.
1. All footnotes refer to bibliography, which appears in full in author's reprints.

cient in itself to establish a positive diagnosis.

In all the reported cases, *pain* was present. In all the reported cases, there was *impairment of joint-function.* All the reported cases presented a *joint-effusion* sufficiently marked to be noted. In a few cases, the joint body was palpable.[14-19-20] In general, pain, limping and joint-effusion were increased by overuse. *Joint-locking* was present in one case.[19]

The x-ray is an invaluable diagnostic aid in these cases; it furnishes information as to nature, shape, volume, number and site of the joint-body or bodies to the surgeon, it reveals the exact nature of the joint-trouble and shows him how to best approach and remove the offending body. In fact, in many of the reported cases, it corrected an erroneous diagnosis.[21]

In two cases, the joint-body was approached by a longitudinal incision,[22] made in the popliteal space. In one case,[23] a large anterior curved incision, dividing the ligamentum patellæ and the anterior capsule thereby completely exposing the articulation, was employed. In another case, the operator resorted to a curved incision parallel to the fibres of the vastus internus. In other cases, a vertical incision, either immediately above or at some distance from the joint-body, was used. Dawbarn[24] in his case irrigated the joint with 1-2000 $HgCl_2$ solution followed by normal salt solution. The articulation was drained in two cases. In five cases, immobilization was a part of the post-operative treatment.

In all these cases, an arthrotomy was performed and in thirteen of them the articulation was entirely freed of the joint-body or bodies present.

In twelve cases, operation was followed by complete functional recovery. In the three remaining cases, the joint-weakness present before intervention did not disappear completely after operation.

PRIMARY JOINT-BODIES ORIGINATING WITHIN THE ORGANISM.

These bodies occur in joints otherwise sound. These joints may, however, present alterations secondary to joint-body irritation, lesions due to the violence which detached the joint-body or changes due to some non-related cause.

We will attempt to determine some facts relative to joint-bodies originating within the organism:

a. What is their incidence?
   1. As to age?
   2. As to sex?
   3. As to articulation involved?
   4. As to association with pre-existing or co-existing, congenital or acquired, anomalies of the affected articulation?

b. Their etiology, structure and pathological anatomy.

c. Their symptomatology.

d. Their differential diagnosis.

e. Their treatment: operative or non-operative. If operative, should one resort to local or general anesthesia? To joint-lavage? To joint-drainage? To immediate closure of the articulation? To immobilization? What is to be the nature of the post-operative treatment?

f. Results of operative treatment.

g. Conclusions.

Incidence as to age.—The reader will keep in mind that the reported age is not that at which the joint-body first became manifest, but is the patient's age at time of operative relief.

The patient's age is not reported in sixteen cases. Fifty-six of the patients are designated as "young men." The two youngest patients operated on for joint-bodies originating within the organism were nine[4] and twelve years[25] old, respectively. The knee was the articulation involved in both cases. The oldest patients were sixty-four[26] and sixty-five years of age,[4] respectively. Schmieden's[4] patient had sustained, fifty-six years previous to joint-body removal, a severe fall upon his right knee. The accident was followed, almost immediately, by typical joint-body symptoms. The other cases admit of the following tabulation:

From 14-19 years	45 patients.
20-29 years	97 patients.
30-39 years	41 patients.
40-49 years	34 patients.
50-60 years	10 patients.

Forty-one patients were subjected to operation for removal of elbow joint-bodies. Twenty-six of these patients were under twenty-one years of age.

Out of 261 cases, involving all the articulations but the elbow, one hundred and thirty-nine, over one half, are definitely stated to have applied for

and received operative relief during the third and fourth decade of life, that is, during the period of greatest muscular activity and of maximal exposure to external traumatic influences.

Incidence as to sex.—The sex of the patient is not reported in eight cases. Thirty-three of the patients were females, and the remaining two hundred and sixty-two were males.

The relative freedom of the female sex from this pathological condition applies to all articulations. Thus, out of forty-one patients, in whom the elbow-joint was opened for the removal of joint-body or bodies, only three are said to have been females. In these three cases[2-4-27] the right elbow was the joint involved; in each there was a history of trauma as etiological factor.

Out of two hundred and forty-five patients operated upon for knee-joint bodies, twenty-six are said to have been females.

Women, owing to occupation, mode of life, etc., are less exposed to traumatic influences than men, and, therefore, pathologic conditions due to external violence are far less frequent in females than in males.

Incidence as to articulation involved.—The condition may be mono-articular, poly-articular, or bilateral.[29-30] Dissimilar joints may be involved in the same individual.

The unequal joint distribution is amply demonstrated by our cases. In some articulations, joint-mice are pathological curiosities. Morestin[31] found in the right piso-pyramidal joint of a female dissecting room subject, a smooth, ovoid, bean-sized, osseous, pedunculated body.

The joint-incidence in the other cases which we studied is as follows:

UPPER EXTREMITY.		
Right	2	
Metacarpo-phalangeal joint of thumb		1
Right	1	
Radio-carpal joint		2
Right	1	
Left	1	
Shoulder-joint		1
Left	1	
Elbow-joint		41
Side not mentioned	1	
Right	30	
Left	10	
LOWER EXTREMITY.		
Second metatarso-phalangeal joint (33)		1
Side not mentioned	1	
Ankle-joint		4
Side not mentioned	1	
Right	2	
Left	1	
Hip-joint		3
Right	2	
Left	1	
Knee-joint		250
Side not mentioned	42	
Bilateral	8	
Right	99	
Left	101	

The preceding shows—

a. That all the bilateral cases involved the knee-joint.

b. That the knee-joint is more frequently the seat of joint-bodies than all the other joints put together (about five-sixths of all cases involved the knee).

c. That the elbow, next to the knee-joint, is the articulation most frequently involved.

d. That, excluding the joints of the upper extremity, there is no marked predilection for either side, both right and left sided joints being involved with about equal frequency.

Association with pre-existing or co-existing congenital or acquired anomalies of the articulation harboring the joint-body or bodies.

Primary joint-bodies occur in articulations otherwise normal, and in articulations, the seat of other non-related pathologic processes. In the latter condition, there will be present a double disability: That determined by the presence of the joint-body and that dependent upon associated conditions.[17, 33, 36]

The indication for removal of the joint-body will be no less imperative, but this removal will, of necessity, have to be supplemented by correction of the associated pathologic conditions.

The violence responsible for the presence of a joint-body may (simultaneously) have injured neighboring structure or structures.

ETIOLOGY.

Joint-bodies are found in individuals of all ages, of both sexes, in all walks of life and in the white and colored[39] race. Many of the reported cases occurred in cricketers, footballers, golfers or equestrians, etc. In the causation of joint-bodies, external violence either of a direct nature, such as that attending bumps, blows, falls, etc., or of an indirect nature, such as forcible muscular or ligamentous contractions, energetic torsions, efforts, strains, etc., appear to be the main etiological factor. Indirect injuries are commonly due to movements productive of abnormal

pressure or great traction on osseous or cartilaginous bone ends.

The etiological influence of trauma in elbow-joint bodies, throwing a ball,[32] wielding a club (hockey, golf, ball-bat, etc.), is evidenced by the fact that the right elbow is three times as frequently the seat of joint-mice as the left. In the elbow cases, it is stated:

That a history of trauma was absent in fourteen cases.

That a history of trauma was present in twenty-seven cases. In these twenty-seven cases, the causative violence was:

A sprain of upper extremity	1 case
A fall upon outstretched hand	2 cases
A dislocation of elbow (Martens)	2 cases
The throwing of a stone, of snowballs	2 cases
A fall upon elbow	8 cases
An elbow injury	12 cases

Among forms of violence productive of knee-joint bodies, we find the following:

Jumping	8 cases
Blow upon knee	16 cases
Sprained knee	16 cases
Injury to knee	46 cases
Fall upon knee	56 cases

In a few cases, a history of more than one injury is obtained.[50]

It has been amply demonstrated that trauma, slight or severe, may break off chips of articular cartilages and underlying bone without inflicting necessarily serious injury upon other portions of the joint. Slight force, attempting to avoid a fall, motion carried beyond normal limits, etc., may be the determining factor. The femoral condyles are the most frequent site of origin of traumatic knee-joint bodies.

From the etiological viewpoint, how can we explain the cases in which a history of trauma is not given and in which evidences of arthritis deformans are absent? In some, it can correctly be said that the causative violence was not severe enough to impress itself upon the patient's memory; an accident occurred, was overlooked or has been forgotten.[51]

As regards the etiology of joint-bodies, the following facts are demonstrated:

a. One or more osseous, cartilaginous or osteo-cartilaginous fragments may be forcibly detached into the knee-joint from the femoral condyles, tibial tuberosities or patella; may be forcibly detached from any articular surface into the joint cavity in the formation of which that surface, in part, enters.

b. Organization of blood-clot and resulting formation of a fibrous mass acting as a joint body is a possible sequel of articular hemorrhage, Short.[52]

c. Lipomata originating in the subsynovial fatty connective[53] tissue may become pedunculated and hang into the joint cavity.[53] If the pedicle breaks off at or near its base, the lipoma becomes a free joint-body.

d. Exceptionally the joint-body is a free or pediculated fibroma, enchondroma, osteoma or ecchondrosis. Purely cartilaginous joint-bodies are not common.

e. As a result of injury, a portion of synovial membrane and underlying fatty connective tissue undergoes thickening and induration.[32] Should this portion project into the articulation, it will be nipped repeatedly during joint-movements. If the pedicle be ruptured, a loose joint-body results.[54]

f. In the normal state, the synovial membrane fringes may contain nodules of cartilage (Kolliker). Morbid conditions, sprains, irritations, etc., can act as a stimulus to these cartilage cells and cause them to subdivide, multiply and give rise to growths projecting into the joint cavity; if these growths are snipped off by joint movements, loose joint-bodies result.[55]

Joint-bodies may be single, double or multiple,[56] free or pedicled,[50] may be present in one, two or more joints, may involve corresponding or dissimilar joints. They may be found in the recesses or other parts of articulations; thus, they have been found to the lateral or mesial side of the patella, in the posterior part of the knee, in the inner supra-patellar pouch,[57] in the sub-quadricipital cul-de-sac,[58] etc. Free and pedicled bodies may co-exist in the same articulation,[59] or the same patient may present free mice in one joint and pedicled joint-bodies in another. When multiple, joint-bodies are free or adherent to each other[59] or to some portion of the osseous[60] or synovial[35] articular surface.

In the greater number of cases, only one joint-body is present, in some, two are present,[61] in some, three,[62] in some, four,[63] in some, five, in some, six,[26] in others, eight,[64] in others, ten.[65]

The joint-body or bodies may be free,[61] pedicled

or only partly detached.[56] The joint-body may be adherent to the synovial membrane, the articular capsule or the bone.[60]

The pedicle may be short or long, vascular or avascular and inserted upon the articular surface at, near to or distant from the site of origin of the joint-body.

Joint-bodies vary in size, shape, and surface characteristics; they may be ovoid,[39] oblong, flat oblong,[66] spheroidal, pyriform, biconcave, biconvex, concave-convex, flattened, reniform, etc. They are pea-sized, lima-bean-sized, olive-sized, pigeon-egg-sized, large chestnut-sized, hen's egg-sized,[67] etc.

The detached body either remains free or becomes adherent to bone, articular cartilage or synovial membrane.[71]

Adhesion of the joint-body to the articular capsule often determines a poliferation of the capsular connective tissue at the site of implantation. This newly formed connective tissue may proliferate into the marrow spaces of the joint-body and close them up, may proliferate partly or completely around the articular body and encapsulate it. Joint movements not infrequently lead to pediculation of the connective tissue bond, and in some cases, to progressive thinning and ultimate rupture of the pedicle thus formed. In experiments on lower animals, the inflammatory proliferation of the synovial membrane may be so marked at the seat of adherence of the joint-body as to lead to encysting and at times absorption of the latter.

For a time, joint-bodies probably are nourished from the synovia by endosmosis.

In osteo-cartilaginous bodies, the regressive changes noted are:

a. Erosion of the living cartilage by infiltrating connective tissue.

b. Degeneration and death of the medulla and osseous portion.[25] The outer cartilage cells alone survive and seem to find sufficient nutriment in the articular fluid. In time, the osseous substance may become the seat of calcific deposits.

Joint-bodies from within may be fibrous, lipomatous, cartilaginous, osseous or osteo-cartilaginous in structure, or may show a more mixed character. The joint-body may be partly or wholly surrounded by a connective tissue capsule. Multiple joint-bodies may[23] or may not differ in structure. Microscopical examination may be necessary. Until our knowledge of the subject is complete, joint-bodies of doubtful nature should be examined microscopically.

The joint-bodies which we studied may be classified, according to structural characteristics, as follows:

a. Fibrous in structure[26, 28, 72, 5], etc	11 cases
b. Subserous fat lumps[2] or subserous fat swellings[29]	6 cases
c. Lipoma, pedicled or non-pedicled[73, 74]	13 cases
d. Osteoma	1 case
e. Enchondros[13]	1 case
f. Osseous in structure	15 cases
g. Cartilaginous in structure	103 cases
h. Osteo-cartilaginous in structure[26, 75, 76]	123 cases
i. Nature of body not manifest	22 cases

The large number of osteo-cartilaginous bodies is explained by the fact that, in by far the larger number of cases, a piece of underlying bone is broken off with the cartilage; the line of cleavage being in the bone and between the bone and cartilage.

In cartilaginous, osseous, and osteo-cartilaginous joint-bodies, histological examination almost invariably shows an absence of blood vessels.

Complete examination of the entire articular cartilage is rarely possible; nevertheless, in some cases, one sees, during the course of the operation, the gap left by the detached joint-body. In knee cases, this defect is commonly situated on the outer surface of the internal femoral condyle in front of and close to the seat of insertion of the posterior crucial ligament.

The defect present at the seat of origin of the joint-body is definitely stated in a few case reports.

SYMPTOMATOLOGY.

Two sets of symptoms call for consideration: First, those referable to the injury sustained by the joint as a whole at the time of the partial or complete detachment of the joint-body; second, those directly dependent upon the joint-body itself. In many cases, the subjective and objective symptoms are so distinct that the condition is easy of recognition. In other cases, the symptoms are either inconstant, mild or difficult of interpretation. Partly detached joint-bodies may persist for years as such, causing at long intervals more or less joint-irritation. Symptoms may be entirely lacking. Joint-locking may be the first symptom.

The symptoms of joint-body proper may first become manifest after the acute inflammatory

symptoms have subsided. In their production, two factors enter: First and foremost, the loose body itself, and to a lesser degree, the circumscribed lesions present at the site of origin of the joint-body.

The symptom-complex is influenced by the mobility, nature, number, pediculation or non-pediculation, size and shape of the joint-body or bodies. The duration of the joint-body's sojourn in the articulation also influences the symptomatology. When the loose body is not dislocated, the symptoms are usually mild. The larger the mouse, the greater its mobility, the greater its surface irregularity, the more severe are the joint-irritation symptoms which it provokes. In general, small, smooth, adherent bodies, and also such as are pedunculated at a favorable site, cause slight disturbance.

I will consider the signs and symptoms of this condition in the following order: Pain and tenderness, joint-effusion, joint-disability, crepitus, joint-locking, direct palpation of joint-body and x-ray evidence of joint-body existence.

Pain and tenderness.—Pain and tenderness are present in a large number of cases and may or may not be associated with other symptoms. They may be constant,[46] intermittent or present only on attempted motion.

Periods of complete absence of pain may alternate with sudden attacks of joint-pain.[85]

Joint-effusion.—The synovial membrane is fretted by the presence of the joint-body and from this and from the initial trauma an effusion results, hemorrhagic (rarely) sero-hemorrhagic or serous (most always) in nature. In one hundred and twenty-two of the reported cases, it is distinctly stated that a joint-effusion was present. It is a common symptom of this condition, being either constant, intermittent,[65] or present only after use, moderate or immoderate, of the articulation. It necessarily alters the contour, the attitude and the measurements of the affected articulation. It may be small in amount, or so marked as to float the patella.

Joint-disability.—Joint-bodies are mechanical obstacles to movement, which may or may not produce great pain. Joint-disability is reported as marked impairment of function in ninety-three cases, as joint-weakness, in thirty-four cases, and as limitation of motion, in fifty-one cases. The joint-body need not interfere with all movements. In the elbow, impairment of motion usually manifests itself as inability to fully extend the forearm (14 cases), in the knee, flexion[83] or extension,[86] or both may be limited. Motion may be painful but not hindered.

Crepitus.—Crepitus is a sensation and a sound; one feels and hears crepitus. In eighty-seven of the reported cases, it is said to have been distinctly elicited. It occurs in cases in which the joint-body is single, multiple,[87] free or pedicled; in the shoulder, elbow, knee and other articulations; upon movement of the joint, of the mouse or of both. It may be provoked by all joint-movements[76] or by only certain movements, as pronation and supination in the radio-humerial joint. In all cases in which the presence of crepitus is reported, the joint-body or bodies present were cartilaginous, osseous or osteo-cartilaginous in nature.

Joint-locking.—Attacks of acute severe, excruciating pain associated with joint-locking, constitute one of the most pronounced symptoms of this condition. It occurs irrespective of the nature of the joint-body. The pain is so severe that not infrequently the patient is nauseated and faints.[84] Attacks of joint-locking, more or less severe, of greater or shorter duration, occurred in sixty-nine of the reported cases.

It has been demonstrated and emphasized that a chipped off piece of bone, cartilage, or bone and cartilage, severed from all connections may wander freely about in the joint, may retain some connection with its site of origin, or may form new connections within the articular apparatus. In cases of adherent joint-mouse, the joint function may be normal for years until the body suddenly becomes loosened, the joint locked and acute inflammatory symptoms set in. This joint irritation, if it lasts only a few seconds, does not much impair the function of the involved articulation.

DIRECT PALPATATION OF JOINT-BODY.

Should the clinician palpate one or more joint-bodies in the affected articulation, the diagnosis is clinched. Palpation informs the surgeon as to size, number, surface characteristics and degree of mobility of joint-mice. In one hundred and seventy-five cases, one or more joint-bodies were palpable before operation. In most of the cases only one body was palpated (130 cases), in

some, two bodies,[89] in others, three,[90] in a few,[91] etc.

Joint-bodies are very elusive; they are not always located at the same spot, being now at one point and now at another. In many cases, they can be palpated at all times; in a few, only after the withdrawal by aspiration of the joint-effusion; in others, only in certain positions of the articulation. When multiple, all or only one or more of the joint-bodies may be palpable.

Inability to palpate a joint-body does not exclude its existence.

A palpable joint-body may be immovable, slightly movable or very movable. It may be movable in all directions or only in one direction.[94]

DIAGNOSIS.

Roentgenography[95] is most valuable for the diagnosis of joint-bodies. Its value is dependent to a great degree upon the ability of the radiographist to take and interpret negatives. The x-ray examination should include both an anteroposterior and a lateral view. Joint-bodies containing no calcific deposits or no osseous foci do not cast a shadow upon the x-ray plate.

Negative findings upon the x-ray plate do not, if other symptoms are fairly conclusive, contraindicate operation. We should all be believers in the x-rays, as a confirmatory agent of, but not as a substitute for, the physical examination, because:

a. The x-ray plate may be negative and nevertheless a joint-body be present.[96-99]

b. The x-rays and the operative findings frequently do not coincide.

c. Errors of interpretation have occurred. A sesamoid bone may be mistaken for a joint-body. For instance: A sesamoid bone in the outer head of the gastrocnemius muscle.

Differential diagnosis.—In the differential diagnosis of this condition the difficulties encountered are due to various reasons:

a. The causative violence may not have been sufficiently severe to leave a lasting impression upon the patient's memory.

b. The condition may not come under the surgeon's observation in the early stage; therefore, one at times is in doubt as to whether an existent joint-body is primary in nature or secondary to a pre-existing or co-existing joint affection.

c. In the absence of an exploratory incision, the interior of a joint cannot be inspected.[41]

d. Radiography may fail to make the case clear.

Joint-bodies give rise to symptoms that are not infrequently misinterpreted. Able men have misdiagnosed the condition. The condition has been diagnosed "a displaced internal semilunar cartilage,[84] "acute synovitis,"[86] "rheumatism."[86]

It is not always easy to diagnose the number of joint-bodies present. One may diagnose one joint-body and at operation find several.[41, 80]

A joint-effusion calls for interpretation. Is it primary? Is it secondary? If secondary, secondary to what? To the presence of a joint-body? The palpatory findings are all important. The detection of a palpable joint-body, movable or immovable, makes the diagnosis self-evident. Joint-locking occurs in only one other common condition: partial or complete detachment of one or the other, almost always the internal semilunar cartilage. In the latter condition, the pain is most marked over the interarticular line.

A partly or completely detached semilunar cartilage calls for an arthrotomy as a preliminary step to its proper fixation or removal. All free or pedicled joint-bodies call for an arthrotomy, as a preliminary step to their operative removal. Since both conditions call for opening of the synovial cavity, failure to differentiate one from the other, is not a disastrous nor even a very significant mistake.

TREATMENT.

In all cases of joint-body herein considered, the involved articulation was opened. In almost all the cases, one joint-body was removed; in the remaining, two or more were extracted.

Patel[61] in his case, used neither local nor general anesthesia. In twelve of the reported cases, the operation was performed under local anesthesia: Schleich's infiltration anesthesia,[54] cocaine,[35, 98, etc.] In Nast-Kold's[80] case, the local anesthetic used is not stated. Most, practically all, operators had recourse to general surgical anesthesia: Billroth's mixture[83] rarely, clololform, exceptionally,[100] ether, generally. Kirschner[59] used lumbar anesthesia.

For the operative removal of joint-bodies, we subject, in the absence of contra-indications, our patients to general surgical anesthesia employing

either nitrous oxide-oxygen or sulphuric ether anesthesia, initiating the latter by nitrous oxide gas.

The removal of joint-bodies, be the latter free, adherent or pedicled, is an operation of short duration which can be further simplified by securing a bloodless operative field. The elevation of the limb and the use of an Esmarch bandage and constrictor, obtain this desideratum.[87] As soon as the joint-bodies have been removed (one must be careful not to overlook any), and before suturing the capsule, the constrictor is removed.

The following tabulation states the nature of the operation performed by the various operators. The operations are classified, somewhat arbitrarily, I admit, into typical and atypical ones.

ATYPICAL OPERATIONS.

1. Opening of intercarpal joint by a dorsal incision; removal of joint-body[88].

2. Resection of head of humerus owing to a coexisting habitual subluxation; removal of joint-body[89].

3. Resection of head of femur close below the trochanter major (femoral head was loose body)[97].

4. Opening of knee-joint; removal of a sub-synovial lipoma and fixation of stump to external surface of articular capsule[73].

5. Incision into knee-joint; removal of joint-body and of portion of synovial membrane to which the pedicle was attached[95].

6. Infra-patellar transverse division of ligamentum patella; opening of knee-joint; removal of one joint-body[1]; removal of three joint-bodies[99].

7. Transverse division (sawing) of patella; opening of articulation; removal of joint-body or bodies.

8. Four-inch incision on inner side of knee, then counter-incision on outer side of knee; removal of joint-body[98].

9. Unilateral arthrotomy: Ten cm. long incision in popliteal space centering over the joint-line and slightly inside of the median line[96]. In one case the posterior incision was supplemented by an anterior incision.

10. Opening of knee-joint; removal of loose fibrous body and curettage of sessile masses present on synovial membrane[101].

11. Unilateral arthrotomy failed to find joint-body; a few weeks later another arthrotomy was performed and the joint-body removed[66].

12. Multiple incisions—two incisions on each side of the ligamentum patellae[91].

TYPICAL OPERATIONS.

1. Unilateral arthrotomy and removal of one joint-body—224 cases.

2. Unilateral arthrotomy and removal of two joint-bodies—14 cases.

3. Unilateral arthrotomy and removal of three joint-bodies—6 cases.

4. Unilateral arthrotomy and removal of four joint-bodies—3 cases.

5. Unilateral arthrotomy and removal of five joint-bodies—3 cases.

6. Unilateral arthrotomy and removal of eight joint-bodies[64]—1 case.

7. Unilateral arthrotomy and removal of several joint-bodies—5 cases.

8. Unilateral arthrotomy and removed from each joint a clump of fat—5 cases.

9. Bilateral arthrotomy[102] and removal of one or more joint-bodies from each joint (knee)—8 cases.

Boecker[86], at the same sitting, operated to cure a coexisting habitual dislocation of the patella.

10. In a few cases two or more operations were performed by the same operator. Unilateral arthrotomy—at first operation, removed one body. At second operation, removed another body—8 cases.

11. Unilateral arthrotomy[4]—At first operation, removed one joint-body. At second operation, removed another body. At third operation, removed another body.

12. Unilateral arthrotomy[81]—At first operation, removed three bodies. At second operation, removed one body. At third operation, removed another body.

For the removal of joint-mice, select an incision giving easy access to the joint-body or bodies present and inflicting the minimal amount of trauma upon the periarticular structures. The position of the incision is largely determined by the location of the body or bodies to be removed. It is generally longitudinal. Joint may be opened directly over mouse. For the removal of knee-joint bodies, some operators make an incision to the inner side of the patella, some to the outer side.[103]

As stated above, some operators used radical procedure: Complete division of the ligamentum patellæ, complete transverse sawing of the patella, long incisions, multiple incisions, incisions on both sides of patella, etc.

Our experience leads us to think that the procedures just enumerated are needlessly harsh and are rarely, very rarely, indicated. We advise for arthrotomies the employment of incisions parallel to the long axis of the limb, and in suitable cases, made preferably directly over the joint-body itself. In the knee, make your incision, if not directly over the joint-body itself, to the inner or to the outer side of the patella. On the inner side of the knee are present the thick muscular fibres of the vastus internus. If adapted to the case at hand, an incision external to and above the patella, parallel with the fibres of insertion of the vastus externus is the incision of election. When

possible separate and do not divide muscle fibres. Avoid incisions calling for transverse division of muscular and ligamentous tissue.

There is one exception to this rule. A joint-body in the posterior part of the articulation, cannot, owing to the narrow communication between the anterior and posterior portions of the capsule commonly be removed by means of an anterior incision, unless one cuts through the lateral ligaments. This is to be avoided. In such cases, place your patient in the ventral position and use a posterior incision. Brackett & Osgood and others have used this method and speak highly of it. The length of the incision varies with the articulation and with the number and nature of the joint-body or bodies to be removed. An incision should be no longer than is necessary to meet the indications present in the individual case; it should inflict the minimal amount of tissue injury consistent with easy removal of the joint-body.

Upon incision of the synovial membrane, the joint-effusion escapes. In cases in which the joint-body or bodies are pedicled, the pedicle has to be cut. Pedicles are vascular or avascular; usually, the latter. If small and non-vascular, division without ligature suffices. If small and vascular, ligate. The larger pedicles should be transfixed and ligated. Should a pedicle stump bleed, either throw a ligature around it, or better still, transfiex it with a ligature and ligate the ends around it. Oozing pedicle stumps have given rise to hemarthrosis.

Joint-bodies are removed with ease or with difficulty. In some cases, upon opening of joint, the body pops out.[66, 85] In one case, being unable to find the joint-body, I flooded the articulation with normal salt solution and thereby washed out the body.

Joint-lavage.—Healthy joints do not call for irrigation. All irritation of joint-endothelium must be avoided. Joint-irrigation was practised only by a few operators. Irrigation of the peritoneal cavity as a prophylactic to peritonitis has been abandoned. Irrigation of the pleural cavity in the treatment of empyema is meddlesome; it has no curative value. Joint irrigation is no preventive of arthritis. It waterlogs the tissues; it lowers tissue resistance; it serves no useful purpose, it delays recovery. We advise that it be not practised. Clean operative wounds do not call for irrigation. Why irrigate normal articulations?

Joint-drainage.—Joint-drainage frequently results in partial or complete ankylosis. It is said to have been used in eleven cases.[2, 61, 89] It delays healing. Its use is frequently followed by limitation of motion, by ankylosis. The more prolonged and thorough the drainage, the greater the probability of consequent ankylosis of the articulation. A non-infected joint does not call for drainage. Even in metastatic septic arthritis, far better results are obtained by repeated aspiration of the joint-effusion and intra-articular injection of a modifying antiseptic solution, such as a 2 per cent formaldehyde solution in glycerin (Murphy), etc., than by drainage. "The rule to drain in all such cases (septic infection of joints) is open to many objections, chief among which are the danger of infection through the opening and the increased liability to form adhesions opposite the track of the drain."[104] Clinical experience has led us to abandon intra-articular drainage in aseptic joint operation.

Immediate closure of articulation.—Immediately after the removal of joint-mice, the joint-capsule and the divided overlying peri-articular tissues should be reunited. The synovial membrane and capsule are closed with catgut (Chaput used fine silk) and the overlying tissues with removable non-absorbable suture material.

In the cases under consideration, it is desirable though not essential that the operated joint be immobilized and that its articular surfaces be pulled apart. Secure fixation of limb by the application of an anterior (rarely), posterior (generally) plaster-of-paris splint moulded to the extremity. The splint should be of sufficient length to prevent all motion in the operated joint. To immobilize the knee-joint, the splint should extend from about 2 inches above the malleoli to within two inches of the perineum. By making extension on the distal segment of the limb, one can secure the desirable separation of the articular surfaces. Thus, the desired separation of the articular surfaces of the knee will be obtained by making moderate extension on the leg. Joint-extension and fixation are continued from five to eight days, during the period of early tissue healing.

Active and passive motion and massage are em-

ployed as needed. Massage is an art and its therapeutic value is proportionate to the technical skill of the masseur. Spare the joint from all overstrain for a month, gradually returning to ordinary active exercise. Time is thereby given for firm organization of scar tissue.

RESULTS.

All the patients recovered from the operation. The local anatomical and functional results were:

1. Not definitely stated, 20 cases.
2. Very bad (5, 88), 3 cases.
3. Unsatisfactory, 25 cases.
   a. Recurrence, 1 case (2).
   b. Stiff joint, 1 case (64).
   c. Impaired motion, 23 cases (2, 57, 102, 105).
4. Fair, 7 cases.
   a. Some impairment of flexion (1).
   b. Extension up to fifty degrees (2).
   c. Flexion to about thirty degrees (60).
   d. Flexion to about forty-five degrees (20).
   e. Flexion to about ninety degrees (3, 20).
   f. Cannot bend knee beyond 130 degrees (22).
5. Full recovery, 212 cases.

In analyzing the results, we first note the important fact that there were no operative deaths. In a large majority of cases non-operative treatment was tried and after being found inappropriate, valueless, harmful, operation was resorted to. In the treatment of primary joint-bodies, it is generally recognized that non-operative measures are not curative. They prolong the patient's local suffering and disability; they indirectly lead to or aggravate existing articular changes. Repeated attacks of joint-locking usually lead to permanent hydrarthrosis. Chronic joint-effusions can disturb to an irremediable degree the anatomical integrity of joint-structures.

There are two cases of joint-resection and one of joint-resection and thigh amputation necessitated by post-operative suppurative inflammation. Post-operative suppuration occurring in clean operative cases is humiliating, is discreditable to the surgeon. We are of the opinion that nowadays it does not and should not occur in the practice of competent aseptic surgeons.

The unsatisfactory and the moderately fair results obtained, occurred, with few exceptions in the practice of men who had made use of joint-irrigation or joint-drainage or both.[2, 80, 105]

In the large majority of cases, over two hundred, joint-body removal was followed by restoration of anatomical and functional integrity.

With such results before us, no one should be allowed to go about suffering from loose or pedicled joint-bodies. Operation cures the condition and is followed in a large majority of cases, sooner or later, by complete anatomical and functional joint-integrity.

It can be asserted that joint-bodies originating within the organism:

1. Occur in joints otherwise normal or presenting only such anatomical changes as are secondary to the presence of the joint-body or bodies therein contained.

2. Occur in joints, the seat of (congenital or acquired) pathological states having no relation, either as cause or effect, to joint-mice.

3. Can co-exist with various articular lesions due to the same causative violence, or secondary either to joint-body irritation or to totally distinct and independent causes.

4. Occur at all ages, in both sexes, in the white and colored race. They are met with maximal frequency in the male sex and during the third and fourth decades of life.

5. Are single or multiple, free or pedicled, and involve one or more similar or dissimilar joints. They may co-exist with extra-articular bodies and with various pathological conditions of peri- and extra-articular structures.

6. Vary as to nature, shape, size, mobility, surface characteristics and as to relation to articular bone ends and synovial membrane. All undergo, sooner or later, degenerative anatomical changes. All, irrespective of origin, determine, sooner or later, degenerative anatomical changes in one, or more, or all the structures constituting the joint.

7. Violence is the first and foremost etiological factor. It may be direct (bumps, blows, falls, etc.), or indirect (torsions, efforts, sprains, strains, etc.), slight, moderate or severe, and cause, in addition to the joint-body, other articular and peri-articular injuries. In exceptional instances, joint-bodies are the result of inflammatory and of neoplastic processes.

8. Organized blood-clots excluded, joint-bodies are composed of one, two or more of the constituent tissues of the joint. They are of a fibrous, lipomatous, osseous, cartilagious, osteo-cartilaginous or mixed nature. The joint-bodies reported were chips or fragments of bone, of cartilage, of bone and cartilage, masses of thickened indurated connective tissue, organized blood-clots, fibromata, lipomata, chondromata or osteomata.

9. It can be asserted, as to articulation involved, that—

a. No diarthrodial joint is immune.

b. Excluding the joints of the upper extremity, the right and the left-sided joints are involved with about equal frequency.

c. The knee and the elbow are the most frequent seats of joint-bodies; joint-bodies in other articulations are clinical and pathological rarities.

d. They are found over five times as often in the knee as in all the other joints put together.

e. All bilateral cases reported in the literature are knee cases.

10. That joint-body symptoms are referable to three factors: (*a*) The injury causative of the joint-body. (*b*) The joint-body proper. (*c*) The secondary joint-changes induced by the presence of the joint-body.

a. The causative injury determines symptoms of acute articular and peri-articular joint inflammation, symptoms analogous to those occasioned by strains, sprains, contusions, fissures of cartilaginous articular surface, and other joint traumatisms.

b. Joint-bodies proper determine one, more or all of the following symptoms: Joint-pain and tenderness, joint-swelling, joint-crepitus, joint-effusion, joint-disability, joint-locking. These symptoms are merely suggestive of the condition which we are discussing. If the joint-body be palpable, the diagnosis is facilitated. It is absolute if the existence of the joint-body is demonstrated by the fluoroscope or skiagram.

c. Joint-body or bodies determine secondary articular changes and thereby induce symptoms varying from slight to complete joint crippling. Repeated attacks of joint-locking and recurrent hydrarthrosis are responsible to a large degree for the deviations from the normal in contour, attitude and measurements of the affected articulation and also for the impairment of joint-function.

11. That an attempt should always be made to diagnose not only the presence of joint-mice, but also their number, location, nature and other characteristics.

12. Roentgenography is an invaluable aid to diagnose the presence, number, location and many characteristics of joint-bodies. The x-ray examination should include antero-posterior and a lateral view. Joint-bodies may exist though the x-ray plate be negative. If a joint-body from within be not the seat of calcific deposits or contain no osseous portion, it will cast no shadow upon the x-ray plate. X-ray findings have merely a confirmatory value.

13. The only relatively frequent condition which is difficult, at times, to differentiate from joint-bodies, is a partly or completely detached or ruptured semilunar cartilage. This condition also calls for an arthrotomy; therefore, the mistaking of a joint-body for a detached or ruptured semilunar cartilage or vice-versa is not a significant diagnostic mistake.

14. An articulation, the seat of a pathological process difficult of diagnosis, should be radiographed. Often, this will result in establishing a correct diagnosis.

15. An articulation, the seat of a pathological process uninfluenced by the appropriate treatment of the condition thought to exist, should be radiographed. Often, this results in invalidating the diagnosis previously made, and suggests a positive treatment.

16. The presence of a foreign body in an articulation, almost always, leads to joint-effusion, always causes pain, always interferes with joint-function and very frequently determines joint-locking. The presence of a wound of entrance may or may not be discernible. The removal of the offending body or bodies is followed invariably by partial or complete cessation of all untoward symptoms.

17. Cases of joint-bodies are not infrequently unrecognized, misdiagnosed and, as a result, subjected to injudicious and, at times, actually injurious treatment.

18. Primary joint-bodies, irrespective of origin, location, nature, volume, number, mobilitp or surface characteristics, invariably impair, sooner or later, the anatomical and functional integrity of the articulation which harbors them.

19. Joint-bodies should invariably be removed by an open operation, using that incision

which gives best access to the joint-body or bodies, and which inflicts the minimal amount of permanent injury upon the peri-articular structures. Chronic synovial effusions are dangerous to the integrity of the joint and justify the very slight risks which attend modern aseptic methods.

20. In penetrating gunshot articular wounds, the projectile may remain free in the articulation, may be fragmented or be wholly or partly imbedded in the bone. It will cause disturbances analogous to those characteristic of joint-bodies originating within the organism. All foreign joint-bodies, missiles, needles, etc., call for removal.

21. Important operative points are:

a. General anesthesia.

b. Use of an Esmarch constricter which is removed immediately after ablating the joint-body and before suturing the capsular wound.

c. Incisions parallel to the long axis of the limb.

d. Location and length of incision determined by the site, size and number of the joint-bodies.

e. Removal of joint-bodies by aid of instruments. Intra-articular manipulation should be reduced to a minimum.

f. No joint-irrigation.

g. No joint-drainage.

h. Separate suture of capsule and cutaneous wounds.

22. The removal of joint-bodies is an operation of great simplicity, having no morbidity and no mortality. If an arthrotomy be performed with aseptic precautions, the risks to the articulation, immediate or remote, are nil.

23. The removal of joint-bodies is followed by more or less complete anatomical and functional recovery. In cases of long standing, the return of complete functional integrity is not always immediate.

24. No one should be allowed to go about suffering from primary loose or pedicled joint-bodies. Operation cures the condition and in a large majority of cases leads, sooner or later, to a complete return of anatomical and functional integrity.

HYPERTHYROIDOSIS.*

Exophthalmic Goiter.

A. Augustus O'Neill, Ph. D., M. D.,
CHICAGO, ILL.
Surgeon in Chief Columbia Hospital.

Variously described and named as Morgagni's disease, Parry's disease, Moebius' disease, Graves' disease and lastly Basedow's disease, instead of being confined to a name indicative of a definite pathological designation. It is true that exophthalmic goiter refers to one of its most prominent symptoms, but with increased knowledge of this subject, it too becomes insufficient, and for this reason I would wish to clarify the literature of this subject and introduce the term hyperthyroidosis. Hyperthyroidism, rightly speaking, would refer to a system or doctrine, so that in dealing with a theory of thyroid influences and manifestations, thyroidism would be a proper term, but the patient suffering from the effects of a hypersecretion of the thyroid gland would be in a condition of hyperthyroidosis. The condition to the above two extremes we must discern a this gland would be hypothyroidosis. In addition to the above extremes we must discern a thyrotoxicosis, which should be confined strictly in its application to the so-called toxic goiter. We may have, clinically speaking, toxic exophthalmic goiter and toxic non-exophthalmic[1] goiter, as pointed out by Wilson and MacCarty. The thyrotoxicosis indicating that severe toxic condition, great depression of the patient, degeneration of the heart and kidneys with or without exophthalmos. The condition of hyperthyroidosis, commonly known as exophthalmic goiter, is accompanied by a constant pathological finding, and may be summed up in two words, i. e., hypertrophy and hyperplasia. The pathology of a thyrotoxicosis is as yet not well worked out beyond the fact of a supposed faulty metabolism dealing with iodine storage and iodine conversion, and has some relation to the regeneration[2] supervening upon the atrophic condition of the acini and parenchema.[3]

The exciting cause of these pathological changes is not known: the toxine or infection however, seems to be mostly conveyed in the drinking water. The boiling of this goitrogenous

*Read at meeting of Chicago Medical Society, Feb. 4, 1914.

water renders it harmless. Intestinal excretions from patients suffering from acute goiter added to sterile water has produced exophthalmic goiter in goats.[2]

The interrelations existing between certain infections, intestinal intoxications, the intoxications of pregnancy and thyroid activity would seem to establish a relationship of cause and effect, and that the beginnings of such thyroid activity would indicate a defensive rather than an offensive action of the gland: a defensive functional activity due to over stimulation resulting in various forms of hyperactivity resulting in degenerations as a consequence of a break or an outriding of physiological coordination, and here again in making such statement we are conscious of the possible sophism of "non causa, pro causa."

When we consider the thyroidation as a possible defensive action combating results of infections and intoxications, the early acute hyperthyrosis should be allowed a certain period of such activity and not until the condition of a hyperthyroidosis with perhaps the added thyrotoxicosis, should surgical intervention be considered. Right here is the medical side of the question which must not be carried too far nor the pathological rest period with improvement of clinical symptoms be confounded as results of certain concomitant medical treatment thus committing the material fallacy of "Post hoc, ergo propter hoc," and this misinterpretation encouraging a medical procrastination with grave consequences.

The surgical treatment of exophthalmic goiter, or hyperthyroidosis, should be divided into the preparatory, the operative and the post-operative. Perhaps in no surgical undertaking is there so much draft upon the knowledge and experience of the surgeon as, first, to decide that an operation must be performed, and, secondly, when to perform it. That considerable care and experience is necessary to decide that there is a condition of hyperthyroidosis present, we know from the frequent discussions and disagreements between physicians and surgeons of known ability. The classical symptom complex of hyperthyroidosis is not at all invariable, and frequently so changed in its predominating signs and so dissimilar in its subjective symptoms that an error can be easily made unless the most careful scrutiny and analysis is brought to bear upon the cases of irregular manifestation. Having determined that a case is one of hyperthyroidosis, which is the question of the evening, there is but one treatment which is safe, sane, and attended with good results, and in the hands of the experienced operator, attended with a very insignificant mortality, and that is surgical treatment.

The success of the surgical treatment depends first, upon the preparation of the patient: the mental condition, the condition of the heart, the condition of the nervous system, and quite as important as the foregoing, the digestive system. In the mental we may have all degrees of change from simple excitability to grave mental disturbances, and insanity: with the heart from increased frequency to a pronounced tachycardia with degeneration of the heart muscle and changes in the entire circulatory system; in the nervous system from a hyper-sensibility and a neurasthenia to that extreme tremor and excitability which when coupled with the mental and cardiac acting and interacting upon each other may present to us all degrees of this disease from the slightest manifestation to that very grave picture of the half crazed, hunted, excited and trembling wrecks with bulging eyes and pink skins, vomiting and diarrheal, gasping for breath in continual tumult and anxiety. No experienced surgeon will today operate upon these extreme cases without resorting to the various means to reduce these dangerous symptoms.

First of all, by rest in the horizontal or semi-sitting position, careful and easily digested diet, medical treatment to modify the mental, the nervous, the circulatory, and lastly, and important, the digestive system. Some of the cases require periods of rest from a week to months, during which time the patient is carefully watched and a study made of any vital changes taking place, and to determine whether these changes are favorable or unfavorable to the patient, and in what particular. It not infrequently happens that with all this care the patient may be making little or no progress, in fact getting ready to slide away unless something beyond the medicinal treatment and rest is resorted to, as the ligation of one or more thyroid arteries, or as I have done in one very severe case tunneled the gland under cocaine anesthesia, carrying through

a capillary drain. I prefer the ligation to reduce the thyrotoxicosis and hyperthyroidosis. The condition of the heart is perhaps one of the most important considerations. At first a tachycardia with normal or high blood pressure, which is soon followed by the more risky condition of a very irregular uncountable, intermittent and fluttering pulse, with low blood pressure, indicating a profound weakening of the heart, and especially if this is coupled with a freely perspiring wet skin, and perhaps an albuminuria indicating a very extreme toxicity.

It is in this condition I have many times by means of ice bags to the heart and neck for as long as two or three weeks at a time, and with small doses of belladonna and intestinal antiseptics, finally succeeded in bringing the patient to the port of safety for operation. The gastro-intestinal crises of hyperthyroidosis are of considerable import and operation must not be performed during one of these periods, or if an attack seems to be on the way, or as pointed out by Mayo,[11] we are very apt to have a fatal termination. The mental symptoms must be brought under control as far as possible for its known influence on the nervous system, and for which purpose I have found bromides with or without either hyoscyamus or belladonna to be of service. Each case must be weighed up by itself and this is one department of surgery where the patient cannot be scheduled ahead to be operated upon on a certain day or handled by the ever-changing interne or nurse who happens to be assigned from day to day, thus interrupting the continuity of attention and responsibility which should be reposed in one or two persons, from whose observations, coupled with that of the surgeon, becomes the basis of establishing a state of vital surgical safety. It is not an infrequent occurrence with the writer to have decided to operate and then postpone a dozen times in a single patient, carefully summing up the vital powers, not the night before, but the hour before the time of operation, and even the kind of day and the thermometric and barometric conditions of the day as bearing upon the patient's condition.

The foregoing period of rest and therapeutic palliation, and I say therapeutic palliation with a sharp sense of discrimination, as I am convinced that the medicinal treatment which is only palliative at best, and sometimes injurious through delay, should be for as brief a period as would enable us to arrive at this period of vital surgical safety.

Having determined that we have our patient in a condition of vital surgical endurance, we must then proceed to the surgical treatment which stands out preeminently above all other known modes of treatment in its promptness of relief, in its effects, and in its mortality. If there is one thing which has proven a failure by a century of observation on the part of the best minds in the profession, it is the incompetency of medical treatment to cope with the complexus of hyperthyroidosis and its far reaching secondary destructive effects.

In resorting to surgical treatment, we have first to consider the question of anesthesia, which may be local or general. As there is so much divergence of opinion in the selection of the anesthetic, will merely state that the writer uses morphin and scopolamine grain 0.25 and 0.01, half the dose given two hours before, and the other half of the dose one hour before the time of operation. The influence of the scopolamine on the mental functions of the patient is very desirable in that it removes all sense of fear, and not infrequently patients walking into the operating room and mounting the table themselves, have no memory of when they went into the operating room, or details of preparation, materially lessening the possibility of mental shock. If in addition to this we determine upon a local anesthetic, I use endermic injections of novocaine, which I find very efficient, which with the above secures a sleepy patient and a dry unobstructed throat. If general anesthesia, I use the same morphin-scopolamine and ether. I have found either one of these methods sufficient in all cases. In a recent case of the writer, the morphin-scopolamine and about 20 CC's of the novocaine solution were found sufficient to remove a large goiter weighing 480 drams, a large portion of which was substernal.

I deem it unnecessary to detail the steps in the technic of the operative procedures, as the general lines are so well established, though modi-

fied by the individuality of the operator in their application to the various forms of goiter.

It is needless to say that in the surgery of hyperthyroidosis, gentleness of handling and delicacy in all the manipulation is essential to a successful outcome. Today the operation for the removal of goiter should be practically bloodless, and the majority of my cases have not lost more than two drams of blood. Probably the most common cause of operative mortality is hemorrhage causing shock, and next increased absorption from the remaining badly bruised thyroid[7] structure, producing a fatal thyrotoxicosis,[2] especially if there has been a lack of proper preparation of the patient and an awkwardly or improperly administered anesthetic. Perhaps a failure to nicely discern that we have our patient in a condition of vital surgical tolerance, has no doubt accounted for the high mortalities of the past.

The points of procedure at present seem to be well settled, though many pathological questions and physiological intricacies of the thyroid gland in its bearing upon other glands and functions remain to be worked out; but the condition of hyperthyroidosis in a practical sense is now so well understood by the surgeon and the grave consequences of an uncorrected hyperthyroidosis leading to the extensive degeneration of the heart, nervous system, kidney, spleen and liver, that one point stands out in the clearest light, and that is that exophthalmic goiter should be operated upon early and before the secondary serious consequences shall have occurred. It is nonsense to expect that where a hyperthyroidosis and a thyrotoxicosis have ravished the system for years and the patient still surviving, that a thyroidectomy will restore the organs which have undergone consequent degeneration nor confuse these degenerations as a continuing hyperthyroidosis. It is not the hyperthyroidosis which remains, but the irrecoverable damage sustained by the nervous system which has now become a neurosis with a heart degeneration, but it is very remarkable what a great improvement takes place even in these extreme cases. In the cases operated upon within the first two or three years, the result of a thyroidectomy seems little short of magical, the patient gaining in weight, the heart slowing down and becoming firm, the patient becoming a normal well being. It must not be forgotten that a neurosis once established is never completely disestablished and my familiar maxim, "once a neurotic always a neurotic," is certainly true, though lessened in a degree.

Exophthalmus if long continued may not be fully corrected and slight protrusion may remain, and in some extreme cases there seems to be a change in the bony structure. The protrusion of the eyeball takes place in the acute conditions in about 80 per cent of the cases, which has been explained to be due to the contraction of the non-striated muscular fibers responding to the same stimuli as the heart; these fibers connect the circumference of the eyeball to the orbital fascia, the contraction being sufficiently great to dislocate the eye forward from this diaphragm which malposition continued for any length of time fails of full correction. An operation may be done, however, to correct at least the apparent protrusion. In one very severe case after the hyperthyroidosis had continued with extreme severity, the well-shaped nose of the patient collapsed into a soft mass, on examination of which no bony structure was found save cartilage in the greater portion of the nasal bone which was simply bent in together with the nasal septum. The osteomalacia was probably due to a disturbance in the pituitary, suprarenal and parathyroid glands, which association however, is uncommon and thus far no definite relationship is established.

The duty of the physician is clear when once the condition of hyperthyroidosis or thyrotoxicosis is recognized; to advise an early operation, as the mortality in the hands of a careful surgeon is not more than the mortality of appendicitis or about one per cent. The writer has performed a first consecutive series of eighty-nine cases without a death, and a series of one hundred and thirty-four cases with but one death, and the latter series not yet closed.

BIBLIOGRAPHY.

1. L. B. Wilson: Med. Record, Aug. 30, 1913.
2. Dr. Chas. H. Mayo: Am. Jour. M. S., 1913, and Jour. A. M. A., LXII, No. 2; Jour. A. M. A., Vol. LIX; Ill. Med. Jour., February, 1913; Jour. A. M. A., LXI, 10-12; Surg. Gyn. & Obs., April, 1912.
3. Wm. Carpenter MacCarty: N. Y. State Jour., October, 1913; Surg. Gyn. & Obs., April, 1913; Jour. A. M. A.
4. A. Kocher: Keen's Surgery, Vol. III.
5. Blackford & Sanford: *Trans. Assn. of Amer. Phys.*, 1913.
6. Sanford & Blackford: Jour. A. M. A., LXII, No. 2.
7. F. V. Smith: Jour. A. M. A., 1914, LXII, No. 2.
8. H. S. Plummer: Jour. A. M. A., Aug. 30, 1913.

GOITER.

Its Prevalence in Chicago as shown by the Examination of 800 Individuals from June 1 to Aug. 31, 1914.

E. T. OLSEN, M. D.

Examiner in Charge, Physical Division, Chicago Civil Service Commission; Former Assistant Surgeon, U. S. Public Health Service.

CHICAGO, ILL.

The following is a summary of the result of the medical examination of 449 women applicants for positions in three different branches of the Civil Service in the city of Chicago. These examinations were conducted under different standards adopted by the Civil Service Commission for the different positions, among which was that of policewoman. In the examination for policewoman the requirements were more rigid than for the other positions and in this examination the height and weight schedule and urinalysis were applied. The results are shown below:

Total number examined	449
Rejected (causes stated below)	176

REJECTIONS.

*Albuminuria	1
*Glycosuria	1
Overweight (see schedule)	47
Underweight (see schedule)	27
Goiter	69
Valvular heart disease (mitral systolic)	1
Cardiac arrythmia	3
Varicose veins	2
Defective vision (below 20/70—uncorrected)	23
Flat feet	1
Skin disease	1
Total	176

*205 examined.

TABLE OF HEIGHT AND WEIGHT.

Feet.	Inches.	Minimum.	Maximum.
5	0	115 lbs.	135 lbs.
5	1	115 lbs.	140 lbs.
5	2	120 lbs.	145 lbs.
5	3	120 lbs.	150 lbs.
5	4	125 lbs.	155 lbs.
5	5	125 lbs.	160 lbs.
5	6	130 lbs.	165 lbs.
5	7	130 lbs.	170 lbs.
5	8	135 lbs.	175 lbs.
5	9	135 lbs.	180 lbs.

The minimum and maximum allowances for weight in the above table are less than those used in life insurance work. The reason for this is the undesirability in this work of having individuals who by reason of lack of weight or excessive weight would be conspicuous or lack the necessary physical strength and endurance to meet all the demands of the service.

Special attention is invited to the large percentage of cases of goiter occurring in this series of cases:

SERIES I.—TABLE OF REJECTIONS FOR GOITER BY AGE AND NATIONALITY.

Nationality—	Age.																								Total.
	19	20	21	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	43	44	48	51	57	
U. S. A.	..	1	..	3	..	2	1	1	..	1	2	1	3	..	3	2	1	1	1	1	..	..	1	..	..	1	26
German	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	1	1	..	..	..	..	..	..	5
Russian	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Irish	1	..	..	1	..	..	..	..	..	4	3	1	2	..	1	1	1	..	..	2	2	..	..	..	..	..	19
Swiss	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Scotch	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Danish	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	3
Swedish	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	2
Hungarian	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Bohemian	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Welsh	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
English	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Negro	..	..	..	..	..	..	..	..	..	1	..	3	1	..	1	..	..	..	..	1	..	..	..	..	..	..	7
Total	1	1	1	1	1	1	1	1	1	11	4	7	3	4	4	3	2	4	3	3	3	1	1	1	1		69

("Nationality" in above table indicates nativity of parents.)

Most of these were born in the United States, few abroad.

No classification of goiter into varieties was made. These varied in degree from the smallest perceptible to the large deforming type of simple goiter and from the not readily diagnosed of the ophthalmic type to that with all of the ocular and cardiac symptoms. No particular attempt was made in any of these cases to make any fine classification of goiter, but the bare fact that in an examination of 449 women 69 cases, or 15.37 per cent., hypertrophy of the thyroid gland was found, is worthy of attention. The large majority of these individuals have been residents of the city of Chicago or vicinity for years, many of them natives of the city or state. No attempt was made to obtain any history of the first appearance of the trouble, for the reason that in

SERIES I.—TABULATION OF REJECTIONS FOR WEIGHT BY AGE.

Age	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	Total.
Overweight	4	2	5	5	1	5	1	3	5	4	5	2	2	2	1	47
Underweight	6	2	2	5	1	5	..	2	..	3	1	..	..	..	..	27
Total																74

(These rejections occurred in a series of 205 cases to which the below standard of height and weight was applied.)

many cases they were unaware of the condition until their attention was called to it in this examination, in other cases the presence of an enlarged gland was disputed and denied by the individuals who were, in all cases, referred to their family physician for confirmation of the diagnosis, further advice and treatment. This large percentage of thyroid enlargement which has been apparent to me for several years in Chicago and which has been, according to my observation, increasing slowly but gradually during the past few years, would apparently point to some condition in this vicinity as a responsible etiological factor. Attention is particularly called to the seven cases occurring among women of the colored race in whom the question of etiology, so far as any European heredity is concerned, can be eliminated, and also to the relatively large number of cases among the Irish or those of Irish descent.

The writer makes no attempt to discuss the etiology nor has he any suggestion to make as to the treatment of these cases. He does, however, desire to invite attention to the undoubted increasing prevalence of this condition and to the fact that the laity is apparently unaware of it, and to the further fact that many members of the profession either ignore an early, slight or moderate enlargement of the thyroid gland until some subjective symptoms cause the individual to seek medical attention, or else they fail to recognize such cases and call attention to the condition when the individuals come under their observation for this or other reasons.

This condition has also been found to be much more frequent in males than is generally supposed, although not as frequent as in females; and while I have been unable owing to lack of time to compile all of my statistics, my observations would lead me to believe that the relative increase of occurrence is the same. One reason why this increased prevalence in men is not more apparent is that they pay less attention to a slight enlargement of the neck, being prone to neglect the cosmetic appearance and usually wearing high neck bands and collars, knowing less about this condition on account of less discussion among themselves of ordinary ills and ailments, and who usually do not consult a physician unless injured or when they have some marked subjective symptoms, and are, therefore, harder to convince of the presence of this pathological condition.

The following tables covering an examination of 350 candidates for the same position (193 men and 157 women, show a percentage of occurrence of goiter of 6.72 per cent. in men and 20.38 per cent. in women:

SERIES II.—GOITER IN MEN (193 EXAMINED).

Nationality—	Age. 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	45	48	51	Total.
U. S. A.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
German	..	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	4
Russian	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Irish	..	..	..	2	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	5
Swedish	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Polish	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
English	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Total	..	..	..	2	1	2	1	2	..	..	1	..	2	..	..	..	..	..	..	..	..	..	1	..	1	13

SERIES II.—GOITER IN WOMEN (157 EXAMINED).

Nationality—	Age. 19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	45	48	
U. S. A.	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	1	1	1	..	1	2	..	9
German	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3
Russian	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Irish	..	..	..	..	..	..	1	3	..	..	..	1	..	..	1	..	..	..	1	2	1	..	..	..	10
Scotch	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	2
English	..	..	..	..	..	..	..	2	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	5
Negro	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	2
Total	..	..	..	..	..	1	1	6	..	..	..	4	..	1	3	2	..	1	2	4	2	2	2	1	32

The cases in Series I. were found in examinations conducted between June 1 and July 31, 1914, and those in Series II. between August 1 and 31, 1914.

SURGICAL CONSIDERATIONS OF THE THYROID.*

JOHN B. HAEBERLIN, M. D.,
CHICAGO, ILL.

In reviewing thyroid considerations of surgical nature one is struck by matured thought of its entire dependence upon our basic knowledge of the gland, viz.: its embryology, anatomy and physiology. This then being our foundation we consider its pathology, its inter-relationship with other ductless glands and the symptoms resultant upon its perverted function. Then, again, our surgical considerations are modified by our medical treatment, and lastly, we are only able to give it surgical consideration after carefully considering and entertaining all the preceding data, they being so inter-related as to be inseparable. Unless all possible knowledge concerning the gland be thoughtfully considered and applied with good judgment our opinions are of naught and our judgment fallacious. So rich is literature on the theoretical conditions of so-called hyperthyroidism, dysthyroidea, thyrotoxicosis, thyroid poisoning, perverted secretion of the gland, etc., that I have limited myself to what I consider proven facts concerning this gland, and will endeavor to eliminate the fantastic theories.

In hyperthyroidism, dysthyroidea and the like it is not known whether our symptom complex, associated with said conditions, be due primarily to a lesion in the thyroid gland, or whether the changes in the thyroid are simply concomitant with the symptoms as they develop. Embryologically the thyroid develops from one[1] to three[2] rudiments, nuclei or anlage at the base of the tongue, which develop and descend towards the heart. If perchance the descent is retarded or withheld we have a high or sublingual goiter. If the descent is excessive we get our substernal goiter. If the nuclei do not fuse together properly, we get accessory goiters. In its formative passage from its nuclei to its position in the neck, as it occurs in birth, we have sometimes a patent tract which is known as the ductus thyroglossus. Surgically, then, we have the lingual thyroid, the substernal thyroid, the accessory thyroids and the patent ductus thyroglossus; the midline cysts from the ductus thyroglossus and other anomalous conditions explaining themselves embryologically. The parathyroids[3] have their origin from the third and fourth bronchial or gill clefts or pouches, which rotate so as to take the position posterior to the lateral lobes of the thyroid. Embryologically they are apparently not related to the thyroid. Roswell Park considers that they are embryologically related. The rotation of the parathyroids to their posterior position of the thyroid glands is more active in carnivora than in the herbivora,[3] so that in meat eating animals we expect to find the gland more intimately associated with the thyroid than in the purely vegetable eating animals. Embryologically the thymus and the parathyroids apparently are intimately associated. Sabotta-McMurrich[4] states that the first rudiments of the thymus are epithelial and arise from the third pharyngeal pouch or cleft, similar to the parathyroid bodies.

The hypophysis, as we know, is composed of two distinct and separate parts—the pars anterior and pars posterior or pars nervosa. Some have added a "pars intermedia." The pars anterior arises from the primitive oral sinus and probably is associated embryologically with the thyroid. Experimentally the thyroid and hypophysis have a marked influence on growth, according to Cushing;[5] they also greatly influence metabolism. The thymus and parathyroids are intimately associated embryologically; their influence is especially on metabolism. Yokayama[6] and Adler[7] have shown that the thymus is antagonistic to the hypertonic action of the adrenals. Clinically we have been shown that frequently we have an inter-related association between the hypophysis and the thyroid. One can see from the preceding data how extremely complicated and inter-related the inter-relationship of the ductless glands are, also the surgical significance of same. One can only stand and hold fast to that which is known and entirely avoid the hypothetic consideration of these glands.

Physiologically what do we know about internal glands, inter-relationship of ductless glands, hormones, and the like?[2] We have the physiological axiom that with all glands having internal secretion the secretion may be, first, increased; second, decreased; third, altered or per-

*Read before Central Illinois District Society, October 27, 1914.

verted. This perversion may be quantitative or qualitative. Upon this truth all our investigations and results stand. It may be brought about by one secretion or hormone influencing the gland directly or indirectly, or may exist independent of the influence of the other glands. That they do influence one another apparently is proven. The thyroid has a powerful influence over growth. This has been proven experimentally and is also corroborated clinically. Ample proof have we in our cases of cretinism and our juvenile myxedema. Again, counter-related to this we have our conditions of gigantism and acromegaly, probably having its genesis in hypophysis. Again, the thyroid has a powerful influence over sex development and sex life. It is thought by many to be a sex gland. There is unlimited proof of this. It has an influence over the other glands of internal secretion. Tatum[8] has shown that on experimental cretinism in young rabbits the hypophysis, thyroid and sexual organs seem to be intimately associated and inter-related. The parathyroids, thymus and adrenals also seem to be closely inter-related. This has been shown experimentally.[6-7]

Removal of the parathyroids results in tetany. This is of great importance to the surgeon. So regularly does this happen that tetany is considered a hypo-parathyroidis. At the Pathological Institute of Vienna there came two patients, one from Professor Kowac's clinic, of tetany adultorum, and the other from Professor Shauta's clinic of tetany gravidarum. Both of these cases showed at autopsy an involvement of the parathyroid glands. This would tend to prove the theory of hypo-parathyroidism. Some experiments seem to prove that there is an increase in the calcium output, with a decreased amount of calcium in the tissues. Others have found this not to be true,[9] claiming that the relief from calcium administration is due to its sedative effect. Greenwald[10] has shown that there is a phosphorus retention in the parathyroidectomized dogs. Many investigators, especially Koch,[11] observed that parathyroids have a special significance on proteid digestion.

From our physiology then we are taught not to disturb these glands of internal secretion. If the thyroid is molested it should only be done under sufficient indications to warrant such procedure. Again, we have learned that the parathyroids should be especially guarded and allowed to functionate unharmed.

Pathology.—The pathology of the gland has been so accurately determined that Wilson[12] states that by examining the gland microscopically he can determine the clinical stage in 80 per cent of the cases, and the severity of the symptoms in 75 per cent of the cases. Wilson, in reviewing 1,208 cases, states that there is a distinct and typical pathological picture for toxic goiter—toxic exophthalmic and the toxic non-exophthalmic. The toxic exophthalmic type has a true pathological picture, it being a true hyperplasia and primary parenchymatous hypertrophy. The non-exophthalmic toxic type he classifies as a true adenoma or adenomatous goiter.[13] The pathology of the non-exophthalmic toxic goiter is that of the formation of new parenchyma of the fetal type with an increased secretion and absorption, thus developing our toxic symptoms.

Symptoms.—The old symptom complex of exophthalmos, tremor, tachycardia and enlarged thyroid is obsolete, and if one is not persistent, he will overlook many cases of thyrotoxicosis and dysthyroidea unless he is on the sharp lookout for symptoms due to thyroid perversion. There are latent cases or the *formes frustes* type that are still very difficult of diagnosis. Occasionally we meet individuals with symptoms simulating or masking dysthyroidea, whose etiological factors may be in the nervous system or in the heart, but if one will persistently and conscientiously analyze his symptoms, he will many times be rewarded by a true diagnosis. There are many latent or insidious cases that are true types of dysthyroidea, so far as our knowledge at the present permits. When a patient presents himself with a condition of thyroid involvement, the question arises, how will we best classify him? Plummer[14] has given a splendid classification, dividing them into hyperplastic and non-hyperplastic, and these again divided into toxic and atoxic, the hyperplastic toxic and hyperplastic atoxic, the non-hyperplastic toxic and non-hyperplastic atoxic. I believe a much better classification for the general surgeon is, first, the toxic, and, secondly, the atoxic. Is our goiter toxic or is it atoxic? Have we symptoms of poison from goiter or does it seem benign? If it is

toxic we then have to determine whether or not we have an associated exophthalmos, so that our toxic again is subdivided into the exophthalmic type and the non-exophthalmic type. All goitrous conditions that are not toxic go under the head of the atoxic thyroid, so that our classification seems very simple indeed.* Wilson[13] has shown us the pathology of these types, and Plummer[14] states that of the hyperplastic atoxic he found only 0.8 per cent. This is the type of gland omitted in my classification. It is my opinion that this latter classification is the better.

What are some of the symptoms of this thyroid toxicity? They may be classified as to their effect, first, on the nervous system; secondly, on the cardio-vascular system; thirdly, on the gastro-intestinal system; and fourthly, the constitutional symptoms.

First, the effects on the nervous system. In these cases some of the earliest symptoms are a mental irritability or undue mental excitement. Many of these patients simply complain of nervousness. We may have mental depression at times. Tremor is usually present. The *tache cerebral* is usually present. In our latent and insidious cases of dysthyroidea we may have many of these apparently trifling symptoms. Individuals complaining of any of these nerve symptoms should always be scrutinized with the thyroid idea in mind.

Second, the effects on the cardia vascular system. Here we have tachycardia, frequently myocardial involvement resulting from toxicosis; variation in vessels and blood pressure and later on cardiac insufficiency; enlarged thyroid due to increased blood supply.

In gastro-intestinal symptoms we have the diarrhea, vomiting, jaundice and intestinal complications. Constitutionally we may have asthenia, malaise, loss of weight. We must, however, not forget that tremor, tachycardia, palpitation and slight thyroid involvement, with or without exophthalmos, should put us on our guard as to this condition. The size of goiter has no relationship to its toxicity. We frequently find great toxicity with small goiters and vice versa.

*I. Toxic.
(a) Exopthalmos present.
(b) Exopthalmos absent.
II. Atoxic.

With the foregoing classification it is an easy matter to say whether we have a toxic or non-toxic condition. If toxic is it exophthalmic or non-exophthalmic in type? We have learned that the exophthalmic type is acute and the non-exophthalmic is not so fulminant or more subacute. Plummer[14] has given us the ages of the toxic non-exophthalmic type as 22 years when first noticed, and evidences of intoxication occurring in these individuals at the age of 36.5 years on an average. The toxic exophthalmic goiter, he has pointed out, develops at the average age of 32, and the thyrotoxicosis is so severe that in less than one year they come to operation. This age average is only reliable when a great amount of material is handled. It has been my good fortune to see many goiter cases, and it has been my experience that a well established case of thyrotoxicosis, in which no error of diagnosis entered, usually is best treated surgically. I have seen both the toxic exophthalmic and non-exophthalmic types recover for years under medical treatment, but all these cases have had a change of environment in their life which eliminated worry and gave the patient quiet, undisturbed, restful surroundings. Never have I seen a case of recovery occur where the old mental worry and severe physical and psychical irritation and exhaustion have kept up.

When one is confronted with a real condition of dysthroidea, with no mistake in the condition, the surgical treatment in proper hands is far and above the best treatment. Although the surgical treatment has its drawbacks and offsets still, when properly done, it is our sheet anchor in these cases. For several years I was more or less annoyed by the feeling that surgical treatment had its undue risks and unnecessary dangers, and I would ask: How do you know that you have taken out just enough or all of the diseased portion of the gland? And, secondly: How about recurrence? How about the mortality danger and danger of complications? To all these there can only be one answer. Watch results of medical and surgical cases. True enough, surgical treatment has still much to be improved, but compared with medical treatment it is the one that brings us relief. I have watched and observed cases that at the onset I considered ideal for medical care and treatment,

both from the patients' physical condition and their environment, and finally would be compelled to operate to give relief to the sufferer.

What are the surgical indications of goiter? First, all toxic goiters are surgical cases. Second, all atoxic goiters that have pressure symptoms, or are ungainly, have a surgical indication. Third, by removing a goiter we prevent the possibility of its becoming toxic. This would be considered a prophylactic operation.

I have purposely left out other surgical indications for operative procedure on the thyroid gland, such as anomalous congenital conditions, cysts, malignancy, etc., as this is irrelevant to the case.

The pathology of the gland teaches us that in the cases where we have toxicity and that toxicity being a menace to the health of the individual, and taking into consideration that we have no means of counteracting and eliminating that toxicity, there remains the one avenue of relief and that is extirpation. This then is a real surgical consideration based on facts, its foundation being pathology and toxicity.

Anatomy and technique.—The thyroid is a single gland of variable size swung over the windpipe, with its lateral lobes nestled in the neck. It is suspended by ligaments attached to the windpipe and has a loose, fibrous, enveloping structure, called Kocher's capsule. The gland is covered by the infrahyoid and infra-thyroid groups of muscles, and has important vascular and nerve structures of the neck on either side. Posteriorly or posterior-laterally we have the parathyroids along with the recurrent laryngeal nerve. In removing the gland especial care should be taken of the parathyroids and recurrent laryngeal nerve. One should have in mind its influence on sex growth and metabolism along with its pathology. Roswell Park[15] states that when the entire gland is removed 70 per cent of these cases develop symptoms. If injury is done the parathyroids, or they be removed by mistake, we may develop symptoms of hypo-parathyroidism. Kocher states that three-fourths of the thyroid may be removed with safety. Mayo states that probably if one-sixth of the gland remains it may be sufficient. One should always bear in mind the fact that the remaining portion may become diseased or artrophied, producing symptoms. Kocher places the life of complete thyroidectomized individuals at seven years. One must need of necessity bear in mind these things in operative work.

In cases suitable for operation the proper preliminary care is greatly beneficial to the patient. These are cases that usually are irritable, whose sensorium is very impressive and whose afferent impulses become greatly exaggerated. Keeping these cases at absolute rest, with all avoidance of psychical and physical annoyance for a period of time places them so that they become far better operative risks. They should be operated on when possible on the up curve or crest of improvement. The Crile method of preliminary treatment associated with his anoci-association should be faithfully carried out when possible, and it will do much in the difficult cases.

The technique of thyroidectomy is of paramount importance. The improvement in technique during the last ten or twelve years has been very marked. In fact, goiter surgery has been revolutionized in the past score of years. Well do I remember my first few cases of thyroidectomy in which the angiotribe and mass ligature were used. This is still recommended in a modified condition by Kocher, as described in Keen's System of Surgery. Although this may accomplish results, I believe it to be surgically obsolete and invariably results in wound drainage during the healing process. Let me state that a rapid splitting of the infrahyoid and infrathyroid groups of muscles is essential in most goiter operations. Occasionally the splitting of the anterior belly of the omohyoid muscle is necessary, bringing us down to the gland itself with plenty of exposure and room to do thorough surgical work. It is necessary to split muscles high up to avoid disturbance of the nerve supply. Our early efforts in thyroid surgery were seriously hampered by insufficient room. With muscles overlapping the gland on all sides our hemorrhages were terrific. Our work in many cases was unseen and our complications more numerous. The more thoroughly one exposes the gland and sees the technique in each of its steps the more ideal will be the results of operation. The splitting of the sternocleidomastoid, I believe, is rarely necessary. This has been recommended by some in difficult cases.

When the parathyroids and the recurrent laryngeal nerve are not to be found the vessels of the gland are picked up and clamped on either side along the line corresponding to the border of the resection. This resection should leave the posterior capsule of the gland and thus at once preserve the nerve and parathyroids. The goiter is then easily dissected out. With this technique there occurs less than one per cent. of complications of nerve or parathyroids.

To the beginner the vascularity may be a hindrance, but one finds with splendid exposure an equanimity that comes with time that there is little danger.

With the removal of the gland the edges of the posterior capsule are then sewed together with a continuous catgut suture, and if this is done accurately the chances for continuous drainage are slight. The control of hemorrhage in sewing together the posterior capsule should be perfect. Sometimes the control of hemorrhage is much more difficult that at others. However, with free exposure one is not hampered with bleeding coming from some hidden source. If the posterior capsule be left open or some of the colloid material still remain exposed to the surrounding tissue, you practically always get a profuse drainage due to the irritating effects of the colloid substance on the surrounding tissue. So one sees the necessity of accurate technique if one wishes good results. In the pictures I show of operative goiter cases, the scar in many is almost invisible. This is due, I think, to good muscle union, non-drainage, and careful technique of closure.

We have still two types of operative procedure that are being used by some surgeons. They are "the ligation of the poles," and secondly, the compression of the glands. Neither of these is surgically correct. Both are simply palliative and although they modify the circulation in the gland they do not remove the trouble. I have done them both and to me they were unsatisfactory. They are operations which may be done in very little time, which speaks in their favor when something must be done to relieve the patient in these extremely severe cases. They are almost always followed by the classical thyroidectomy later if the patient survives for his second ordeal.

In regard to catgut, I believe the chromic catgut to be irritating and should be discarded. It may be sterile, but the particles left while gut is absorbing, are irritating and may produce slight though sterile necrosis. This I believe holds good in other parts of the body. When we have removed the diseased portion of the gland we need have no especial alarm about the remainder becoming hypertrophied, as Hunnicutt[16] has shown that in partial thyroidectomized dogs the remaining gland has not undergone hypertrophy and hyperplasia. That we have a hormone in the gland with an inter-relation of secretion not many doubt. This should make us the more thorough and more careful in our cases, but it should not exclude our responsibility for doing all that is possible for our patients afflicted with these conditions. We must face the truth and stand fast until some better plan of procedure presents itself. The surgical treatment, therefore, is the one that is best adapted for the relief of these unfortunate patients. Let us hope that we will in the future develop some type of treatment to eliminate the operative procedure in these cases.

1. C. H. Mayo: A Summing Up of Goiter Quest. S. G. & O., March, 1914.
2. Sabotta-McMurrich: Textbook of Human Anatomy.
3. Prog. Med., June, 1914, p. 409, The Parathyroids.
4. Sabotta-McMurrich: II, 109.
5. Ibid, March 1913, CXV, No. 3.
6. Virchow Archiv, 1913, CCXIV, No. 1.
7. Adler: Ibid, CCXIV, Vol. 1.
8. Jour. of Exp. Med., June, 1913.
9. Prog. Med., June, 1914, p. 410.
10. Jour. Biology Chemistry, May, 1913.
11. Ibid, 1913, July.
12. Am. Jour. Med. Sc., December, 1913.
13. Jour. Med. Sci., March, 1914.
14. Jour. of Med. Sc., December, 1913.
15. S. G. & O., 3-14, Roswell Park.
16. J. M. S., August, 1914.
17. Keen's Surgery, VI, 336.

EFFECTS OF GOITER AND RESULTS OF REMOVAL ON THE CIRCULATORY SYSTEM.*

E. P. Sloan, M. D.,
BLOOMINGTON, ILL.

It seems strange, that with the obvious parallel course of the pathological conditions of the thyroid gland with the well-understood and well-known changes in the circulatory system, that it was so long before their real connection was established.

Any tumor, any degeneration, any irritation

*Read before the Southern Illinois Medical Association, Nov. 5, 1914.

of the thyroid gland itself, or any disturbance of the circulation of the gland will cause hyperplasia to develop, followed by hyperthyroidism.

According to the old theories, the functions of the heart are controlled by one set of fibres from the sympathetic and one set from the vagus, having opposite functions, one acting as the accelerator and the other as the inhibitor. But after total extirpation of the entire cord and removal of the vagal centers, the injection of suprarenal extract causes the heart to resume its beats. These experiments have shown that the augmentor and inhibitory centers are not stimulated by the suprarenal extract, as was thought. So the suprarenal extract must exercise a stimulating action directly upon the cardiac muscle itself. We find that the veins and arteries contract under its influence. Even an excised one will contract readily for some time after excision if dipped in an aqueous solution of suprarenal extract.

The conclusion is evident that suprarenal extract causes cardiac and vascular contraction by stimulating directly the muscular elements of the heart and vessels, and not indirectly through the vasomotor center. The very marked contractile power that suprarenal extract possesses over the muscular coat of vessels plays an important indirect role in goitre which seems to have been overlooked; i. e. that, as capillaries are not supplied with muscle fibres their walls consisting of endothelial plates, they are not contracted as are arteries and arterioles. When the venous and arterial vessels contract, their capillaries dilate, owing to the increased pressure to which the arterial contraction and increased heart action gives rise within them. Therefore, as the substance of the thyroid gland is made up largely of capillaries, any contraction of the veins, combined with increased blood pressure, by dilation of the capillaries will cause engorgement, and if continued, hyperplasia of the gland.

Experiments prove absolutely that the absorption of oxygen and elimination of carbonic acid in the lungs are not due merely to diffusion of gases but to some active processes at the point of contact of air with blood. "The blood contains," says Schafer, "a substance or substances which greedily appropriate any free oxygen which may be present in the plasma, and are even capable of abstracting the oxygen which is combined with hemoglobin, so that arterial blood rapidly becomes converted into venous blood, when it is not exposed to the access of fresh oxygen." It seems certain that some substance capable of taking up the oxygen of the pulmonary air, and combining with it and assisting at its final office is present in the blood. So during static engorgement of the gland substance this is what occurs in the blood contained in the gland itself. Just what change occurs is not known, but every operator of experience knows from observations that blood from an engorged gland has undergone some unusual change. This changed blood perhaps causes changes to occur in the gland substance and also stimulates the secretion of more of the reducing agent in an attempt to increase oxidation. Any enlargement of the gland causing pressure on the blood vessels disturbs the venous return more than the arterial supply, because the veins are more exposed and easier compressed. This contributes to blood stasis and engorgement of the gland.

Again the principal role of the pituitary body seems to be to regulate oxygenation, thereby controlling the temperature, and the general temperature is raised by stimulating the anterior pituitary body, which stimulates the adrenals and the temperature of the body is raised by *increased oxygenation*. There seems to be some inhibiting influence located in various parts of the body, but the main inhibitory center seems to be in islands of Langerhans in the pancreas. So we have the adrenals stimulated and controlled by the pituitary gland as the main accelerating influence, and the Islands of Langerhans in the pancreas as the main inhibition centers. It was formerly supposed that the thyroid gland was the main accelerator of the system and the islands of Langerhans the main inhibitors, but very recent observations and studies seem to point to the thyroid gland as the sensitor of not only the adrenals and pituitary, but of the inhibiting apparatus as well. The action of the parathyroids seems to be to control the relative activities of these various mechanisms in the presence of infections, poisons, toxins and every kind of degeneration.

I do not mean to be understood as denying nerve and vagus effects in goitre. We certainly have irritation of brain cells and nerve ganglia and frequently a pathological condition of the

ARRANGED ACCORDING TO LENGTH OF TIME SEEN BEFORE OPERATION.

Age	Sex		Classification	BEFORE OPERATION: 6 mo. B.P.	6 mo. P.	Duration—years	3 mo. B.P.	3 mo. P.	AFTER OPERATION: 1 mo.	1 wk.	At operation	1 day	3 days	1 wk.	2 wks.	1 mo.	Apparent general condition at 1 mo.	3 mo.	6 mo.	Apparent recovery	1 yr	2 yrs.	
18	F.	1	Non-exophthalmic. Diffuse mental and nervous symptoms	110	54	2	110	54	110	54	106	78	110	164	110	168	115	160	120	140	130	140	125	105	‡	120	105	120	80	§	120	170	120	72	
17	F.	2	Non-ex. Diffuse mental and nervous symptoms	106	52	1	115	60	115	60	115	50	115	160	150	140	150	140	140	130	140	110	125	90	‡	120	74	120	74	§	120	172	120	72	
34	F.	3	Exophthalmic (cystic multiple rt. lobe)	160	170	7	165	140	165	140	165	140	160	120	150	110	140	100	140	100	130	100	130	100	‡	130	100	125	80	†	125	80	125	80	
39	F.	4	Exophthalmic cystic lobules	190	120	5	190	120	190	118	190	115	190	120	160	160	180	160	180	160	190	140	190	120	‡	190	100	185	95	§	165	90			
24	F.	5	Non-exophthalmic cystic lobules	170	160	½	160	160	150	160	145	155	140	160	140	160	130	160	130	140	130	120	130	115	‡	130	100	125	95	§	125	90	125	90	
44	M.	6	Non-exophthalmic Carcinom			15	210	120	200	120	200	120	200	120	200	120	200	120	200	120	200	120	190	120	‡	180	110	170	110	†	180	100			
22	F.	7	Non-exop. Diffuse—nervous			2½	190	165	180	155	175	120	175	120	170	130	160	115	160	110	160	110	155	100	‡	150	95	140	90	§	140	90			
66	F.	8	Exop. lobular (cystic adenoma calcareous degree)			40	115	72	115	72	115	72	115	72	160	90	120	78	120	76	120	72	120	74	‡			120	74	§					
27	F.	9	Exop. lobular			4	185	135	185	130	180	135	180	130	210	170	200	160	160	120	150	100	150	100	‡					†					
42	F.	10	Exop. lobular			10	160	150	160	140	150	120	145	110	160	140	160	130	140	90	130	90	130	90	‡	130	90	130	90	§	130	90			
34	F.	11	Exop. extreme lobular, cystic deg.			16	140	160	140	140	140	120	140	100	140	100	140	100	180	95	130	95	120	90	‡					§					ex. exop.
34	F.	12	Exop. lobular			7	140	150	140	160	140	145	140	140	145	160	140	145	140	140	140	130	140	100	‡					§					that not imp.
32	F.	13	Exop. extreme. Diffuse			⅔	135	140	135	160	135	140	135	135	135	135	135	120	130	100	130	95	125	90	‡					§					ex. exop.
53	F.	14	Non-exop. lobular			3	155	140	155	140	155	120	155	120	155	140	155	130	150	120	140	110	135	100	‡					§					that is im.
64	F.	15	Non-exop. lobular (chronic)			30	190	120	190	130	190	120	190	120	190	120	190	120	190	120	190	100	180	90	‡			185	90	§	185	90	185	90	
44	F.	16	Non-exop. lobular (operated 6 years before. More gland and tonsils removed at this operation)			20	180	160	180	150	180	150	180	150	180	170	180	160	180	150	170	110	170	100	§					§	170	85			
60	M.	17	Non-exop. lobular (Carcinom and foetal adenomata)			25	160	100	160	100	160	100	160	100	160	100	160	95	160	95	160	95	160	95	§			160	95	§					
49	M.	18	Non-exop. foetal adenomata			10	130	120	130	120	130	160	130	130	130	130	130	120	130	110	130	105	130	100	§			130	90	§					
25	F.	19	Exop. Diffuse			7	140	145	135	120	130	115	130	110	135	160	135	120	130	110					§	120	90			§	125	74			
28	F.	20	Non-exop. Diffuse (nervous)			2	•	160	•	130	•	145	•	135	•	135	•	130	•	120	•	100			§	•	95	•	70	§					
18	F.	21	Non-exop. Diffuse (nervous)			1	•	120	•	110	•	155	•	140	•	120	•	110	•	80	•	80			§	•	75			§					
18	F.	22	Exop. Diffuse (asthmatic pressure)			½	•	110	•	100	•	100	•	100	•	120	•	100	•	90	•	90			§	•	75			§	•	70			
45	F.	23	Exop. nodular cystic symptoms			14	160	145	160	120	160	120	160	120	150	125	150	125	150	120	150	120	150	110	§	150	100	150	90	§					
42	F.	24	Non-exop. Diffuse (toxic)			8	•	100	•	100	•	100	•	100	•	100	•	100	•	90	•	90	•	95	‡	•	85			§	•	80			
44	M.	25	Non-exop. (adenoma), (tuber.)						•	120	•	120	•	100	•	120	•	120	•	110					‡‡	•	95	•	90	§					
68	F.	26	Non-exop. nodular			12			•	120	•	120	•	120	•	130	•	120	•	110	•	100			‡‡	•	90	•	90	§					
47	F.	27	Exop. cystic			15			140	130	140	130	140	130	140	130	140	130	140	130	140	130	140	110	‡	140	100	140	100	§					
67	F.	28	Exop. nodular			30			180	120	180	120	180	120	180	120	180	130	180	130	180	130	180	120	‡	180	120			§	190	95			
19	F.	29	Exop. diffuse			1					100	65	110	70	100	120	110	120	•	115	•	115	•	100	‡	120	95			§					
28	F.	30	Exop. (pressure intra-thoracic lobe)			1					•	80	•	80	•	90	•	90					•	90	‡					§					
25	F.	31	Non-exop. Diffuse and substernal			½					•	90	•	90	•	90	•	90	•	85					‡	•	80			§					
22	F.	32	Non-exop. Diffuse and substernal			2					•	90	•	90	•	90	•	90	•	80			•	80	‡	•	80			§			•	80	
52	F.	33	Exop. Diffuse. Cystic			9					•	120	•	120	•	130	•	125	•	90			•	90	‡					†	•	85			
27	F.	34	Exop. Diffuse. Cystic			7					•	115	•	115	•	110			•	80			•	80	§	•	80	•	80	§					
62	F.	35	Non-exop. Fibroid (calcareous)			25					180	110	180	110	180	110	180	120	180	120					‡‡			180	100	§			180	100	

Pulse rate and blood pressure given at nearest five.
Time before and after operation is necessarily approximate.

Exopthalmus is used only to designate eye symptoms

115 to 130 blood pressure is called normal and marked "•"

†Fair.
‡Good.
§Perfect.

brain and sympathetic system. But the goitre and circulatory disturbance is the cause of the brain and nerve lesion, not the brain and nerve lesion the cause of goitre.

The popular idea that the protrusion of the eye in goitre cases is due to the increased blood pressure seems to be an error. We have it sometimes with low blood tension. It is caused by irritation of Lanstrom's muscle.

With the conception that the secretion from the thyroid gland is merely the sensitor for the adrenals, pituitary body and the entire inhibition apparatus, as a working basis, we are in a position to study the results of pathological conditions in the gland itself and results of abnormal secretion upon the system.

According to symptoms, goitre cases easily fall into three groups; first, those usually called exopthalmic. In these cases we have tremor, weakness, exophthalmus, thyrotoxis, tachycardia and hypertension. In the second group, no tachycardia, no increase in the blood pressure, but we have the same toxic symptoms of depression, tremor, cold skin, sweating, etc., and usually pronounced mental and emotional symptoms, but with a slow pulse and dull eye. In the third group we have the symptoms of toxemia and underoxidation. This group is composed of the early cases before the augmentor and inhibition apparatus have lost their balance and damaged the circulation. They are usually diagnosed as auto-intoxication.

A patient in this group will sooner or later have some experience that will bring about a disturbance of balance and then the circulatory system is affected. There is not only over-exertion of the heart muscle against a rigidly contracted arterial system, but the lessening caliber of the veins and enormous distention of the capillaries combine to increase the strain on the heart. Not only this but the changes that occur in the blood during its lengthened capillary invasion makes it irritating to the lining of the veins and right side of the heart, so we soon have thickening of the lining of the veins and of the entire endocardium of the right side of the heart, and of the lining of the blood vessels of the entire pulmonary circulation. This puts an increased load on the right side of the heart.

We have operated on four cases in which only systolic heart sounds were audible. The slowness of the intake from the veins and the thickened valves and rapid heart impulses combine to give the effect of only one heart sound. The most prominent and constant symptom of these cases of endocarditis is restlessness without obvious cause.

It is obvious that these cases will in time come into the first or second group unless the progress of the disease is checked. Those in the second group with the over-stimulation of the inhibition apparatus and the usually severe toxic symptoms seem prone to develop kidney and brain disease. This is not strange when we consider the effect that the toxic blood must have upon the delicate cells of the brain and upon the secreting cells of the kidney.

Blood pressure findings are invaluable for study if they cover several weeks previous as well as at least six months following operation. The chart of 35 of them suggests that the longer the duration of the goitre, the higher the average of the blood pressure, but not always of the pulse rate. The shorter the duration of the disease the quicker the blood pressure and pulse rate return toward normal. Those with lobular goitre have had higher blood pressure and lower pulse rate than those with diffuse. Some with high blood pressure had no protrusion of the eyes and some with low blood pressure had extreme protrusion. Removal of the tonsils has seemed to lower the blood tension appreciably for two to three months in cases of hyperthyroidism.

The older the patient and the longer the duration of the goitre, the less effect operation has had on the blood pressure, but the improvement in the general condition seems to be entirely satisfactory. A large number not included in this chart, as well as some of these, appear perfectly well although the blood pressure remains extremely high.

Some goitres disappear. Changes often occur in the gland that check the hypersecretion, yet in an enormous number of people goitre is causing real damage every day.

The only certain and satisfactory treatment we have is thyroidectomy. The operation is safe if done early enough. In very extreme cases the patient should be prepared for operation very patiently.

Rest in bed is the main thing. The patient should not be allowed to raise up even to eat or drink. No excursion to the bath room should be permitted. Ligation of the blood supply to the gland is practiced extensively by some of our best men. Ligation causes a thrombus to form and part of the gland becomes non-secreting and symptoms are temporarily relieved. Injection of *boiling* water has the same effect. It is not as dangerous and in our experience is more satisfactory. Ten to 40 minims is enough and should be injected every fifth day through a rather large, short needle. I do not believe the patient should be allowed up before eight weeks after this procedure, unless the portion of the gland injected has been removed. Ice bags to the throat are used by some extensively. We never could see any benefit derived from this procedure.

About two years ago we noticed that removal of diseased tonsils affected goitre cases very favorably. Then in some very advanced goitre cases we tried removing apparently healthy tonsils. The immediate effect was so favorable and decided that we feel that the tonsils must secrete some substance that augments the circulation, and that their removal gives temporarily a positive relief. In our hands, removal of seemingly healthy tonsils has given more temporary circulatory relief than ligation of the poles of both lobes of the gland. This effect is not due to the hemorrhage, as proven by the fact that in the cases where no appreciable hemorrhage occurred the results were brilliant.

During the last fourteen months we have used tonsillectomy with great satisfaction as routine procedure in preparation of extreme goitre cases for operation. Following it we keep them absolutely in bed and think maximum of relief is attained in 10 to 16 days. In very severe cases we keep the patient in bed, give boiling water injection every fifth day and finally remove every vestige of tonsils. Removal of a small stump left from previous tonsillectory will sometimes give wonderful relief. Ten to sixteen days later we operate.

We always use gas anesthesia, preceded by morphin grain ⅛ and atropine 1/150, given one-half hour before operating; then we use novocain ⅜ per cent. for skin infiltration and nerve blocking of the deeper structures.

It is considered that one-sixth of the gland is sufficient to continue its action. I believe it is better to leave a portion of each lobe when possible. At the upper poles are usually some healthy portions of gland that are easily left. We cut through the gland substance with impunity.

By making tension upon the gland and clipping only the connective tissue, there is no leakage of thyroid material following the separation. Searing the cut surface with the cautery or crushing the gland before cutting is absolutely unnecessary and harmful. Only the smallest possible portion of gland should be crushed. The mortality has been nil in our experience and the results have been more than satisfactory in all but two and they were benefited.

These patients have all started on the road that runs through the first station of auto-intoxication, on to the stations of ruined circulation, destroyed kidneys, injured brain cells, protruding eyes, lost sexual powers, continual agitation, disturbed emotions, difficult breathing, uncomfortable living, unhappiness and ultimately disaster and death.

My plea is that we rescue them, not at the station of exopthalmus, not at the station of tumor of the gland, not at the station of destroyed circulatory apparatus, but before serious and irreparable damage has occurred let us recognize the condition and rescue them at the station of auto-intoxication.

DISCUSSION.

Dr. F. Buckmaster, Effingham: This is a very important subject and one which, of course, many of us are unable to discuss properly, but I feel that it is one of the most important questions that will be brought up at this meeting. It is unfortunate that many of the men who have taken the time and trouble to come to this meeting have not heard this paper. I saw Dr. Sloan operate on his 150th and 151st cases and the doctor has done a great deal of good work on the subject of goitre, not only in operative work, but his study of the work and the results of his work are to me very interesting. I feel that his work in this field is considerably different from that of a great many workers along this line. The doctor will certainly teach every one who is not giving the subject a great amount of thought the importance of an early diagnosis in goitre, as he tells you in his statistics, and the results are bound to be a great deal better following operation.

We know in these goitre cases that we have extensive degeneration of heart, kidneys, blood vessels,

and removal of a portion of the gland itself does not regenerate or reinstate normal conditions in these parts; for this reason, operation should be done while the patient still has a pretty good framework of these parts left.

The doctor has given me a great deal of information along the line of substernal goitres and goitres that are hidden. We have a patient who came to us a short time ago with great exophthalmus and all the symptoms well marked. She is a late stage case and she shows absolutely no thyroid enlargement on actual examination. By having her lie down, placing a pillow under her shoulders and lifting her up, the upper edge of the goitre can be seen, one which otherwise is substernal.

If any one of you is in the doctor's neighborhood and will let him know ahead of time when he is doing goitre work, he will certainly show you much interesting work and give you a good deal of information.

THE WEST INTRA-NASAL PARTIAL RESECTION OF THE TEAR SAC FOR DACRYOCYSTITIS, DACRYOSTENOSIS, PHLEGMON OR EPIPHORA.*

J. SHELDON CLARK, M. D.,
FREEPORT, ILL.

The subject of blennorrhea of the nasal duct, with accompanying inflammation of the lachrymal sac, is one which should be more thought of by the medical profession as a whole. Time was, when all we thought of doing for the alleviation of those suffering from this distressing and disfiguring affliction was the use of measures of more or less temporization. Repeated probings are of little value where there is a stenosis. In my opinion, where probing is to be thought of, if a result is not obtained in two or three sittings, then one should desist in this and make preparation to do something more radical. The wearing of styles of copper wire are objectionable to the patient in many ways, and are furthermore a constant reminder of a physical imperfection.

Chronic dacryocystitis is a very dangerous affair for any one to carry about. The trouble is that it is like the dynamiter's bomb or his bottle of nitro-glycerin; it is likely to "go off" at any moment. One with a sac infection is liable to corneal injury at any time, and if the conjunctival sac is continually bathed in pus, what a fine opportunity for infection to take place and cause an ulceration of the cornea, upon the slightest injury to that structure. Fuchs, in his text-book, says that acute dacryocystitis causes fully one-third of all the cases of ulcus serpens, that dreaded disease of the cornea which is so disastrous to sight.

To my mind there has been entirely too much procrastination with regard to chronic tear sac infections. We would not so temporize with pus sacs in other parts of the body and why here? Up to the present time the Meller operation for total excision of the tear sac has given good results. There are objections however, to this procedure and I think that West, in his operation, has overcome these objections. First is the idea that most people have that there will be a resultant scar. Second, is the query regarding the tears. We can with much assurance tell the patient that there will be no scar, and yet scars do sometimes appear. Then as to the tears. Although we can state that there is a marked diminution in the secretory function of the tear glands, all of which is more or less conjecture, and we can say that in event that there are too many tears tumbling over the face, that we can remove the tear glands, yet all this does not make for the peace and comfort of mind of the prospective patient, and he is quite apt to delay the operation. When one broaches the subject of the intra-nasal operation it has been my experience that it is regarded by the lay mind with much greater favor. I think rightly so, for he now has a functionating tear apparatus and has neither the anticipation nor the realization of any external defect.

Parsons[1] (Pathology of the Eye, ii, 750) says: "The sac is lined by cylindrical epithelium, usually in two layers, the inner layer consisting of very high cells, 35 to 50 microns. There is a definite basement membrane. It is doubtful whether the cells ever bear cilia. There are often many goblet cells. Beneath the basement membrane is an adenoid layer of the usual type. It is doubtful if ever it contains follicles normally. The sub-mucosa contains dense fibrous tissue which is very vascular, especially on the part adjacent to bone. There is no muscular coat, but elastic fibres are abundant." In cases of stenosis, as a rule, the point of inflammation and resultant

*Read before the 64th Annual Meeting of the Illinois State Medical Society, at Decatur, May 20, 1914.

stenosis, occurs at the narrowest point in the lumen of the duct, and that point is just beyond the lower end of the sac, at the beginning of the nasal duct. It is easy to see that in turgescence of the duct that at this point the epithelial cells are first encroached upon and their blood supply interfered with; and resultant inflammation occurs.

Infections of the sac can be either ascending or descending. One condition that exists more frequently than many suppose, is tuberculosis of the tear sac. Bribak, working in the clinic of Professor Axenfeld, in the University of Freiburg, reports upon the material in that clinic and states that in the past few years twenty-five cases of tuberculosis of the tear sac had been found, although only a part of the extirpated sacs were examined microscopically. In their experience, tuberculosis of the tear sac has been the only demonstrable lesion of tuberculosis found at autopsy. Axenfeld describes these cases of tuberculosis of the tear sac as being "doughy, elastic, and having slight resistance." It would seem therefore a matter of moment that we make a diagnosis of tuberculosis of the tear sac before the process has gotten beyond the tissues of the sac. Conservative treatment in these cases is only putting off the evil day.

My attention was first called to the operation of Dr. West, by Professor Holth and his friend Dr. Heidenrich, both of whom had made the trip down from their homes in Christiania to Berlin for the purpose of studying West's technique. We found the doctor very busy at his work in the poliklinik of Professor P. Silex, at 18 Karlstrasse, Berlin. At that time Dr. West had records of over two hundred cases that he had operated upon for varying conditions of the tear sac, these included phlegmons, chronic dacryocystitis, dacryoblennorhea, fistulas and secondary operations following the Meller excision procedure, where the patient complained too much regarding the epiphora.

The operation is highly satisfactory in the conditions above mentioned. Before selecting a case for this operation one should examine the canaliculi to see if they are smooth; if they are not the results are correspondingly poor, for the canaliculi must be able to perform their function and get the tears over into the sac, or what is left of it, in order that you have a positive result. One puncta should work, and preferably the lower one.

The relation of the ethmoid cells to the fossa lachrymalis is interesting for the fact that they vary so much in different skulls. Usually the ethmoid cells all lie posteriorly to the lachrymal fossa, and in an antero-posterior section this is very interesting to note. Occasionally one or two cells extend laterally and anteriorly, thus in a measure hindering one in his work at getting at the sac. However, their presence is not an insurmountable difficulty in performing the operation.

The lachrymal fossa is formed by the junction of the paper plate of the lachrymal bone and the nasal process of the superior maxillary bone. There are three types of fossae. 1. Where the maxillary bone forms two-thirds of the fossa and the paper plate one-third. 2. Greater part of the floor of the fossa made up from the maxillary bone. 3. Greater part of the floor of the fossa made up from the paper plate of the lachrymal bone. Therefore it is plain to see that an easy access may be gotten to one sac, while in another, one would encounter heavy bone with corresponding greater resistance.

The principle of the operation is to cause the tears to pass through the sac directly into the nasal chamber, without descending the duct to the inferior meatus. The idea of getting drainage through the nose and thus affecting a cure in cases of dacryocystitis is an old one. The ancient Greeks and Egyptians had their ideas concerning the modus operandi; using everything from a hot poker up the gauntlet of mediaeval surgical instrumentaria. Caldwell, in 1893, reported a case in which he had run a sound from above downward to the point of stenosis and then burred up from the nose until he came to his sound and says that he cured his patient. He was obliged to take away the anterior end of the inferior turbinate.

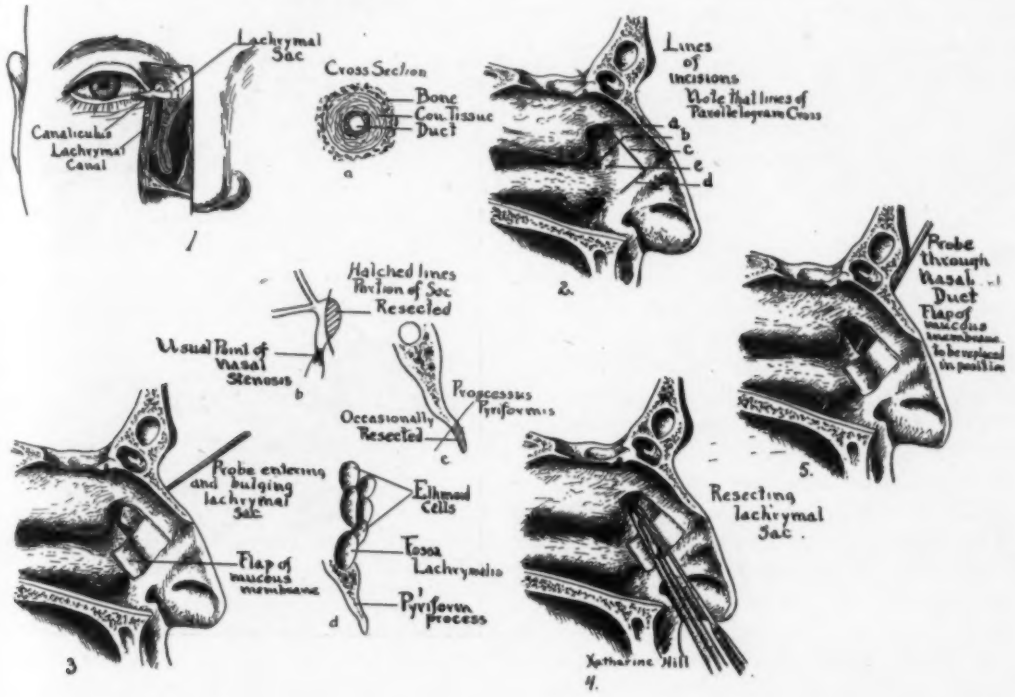
In 1899 Seifert, of Württemberg, reported the removal of the tear sac for tuberculosis, and Professor Killian, in the discussion, mentioned that he had removed the anterior end of the inferior turbinate, thus getting to the canal for the treatment of tuberculosis of the tear sac.

In 1903 Passow, then at Heidelberg, reported

four cases of the Killian procedure, in which he did a preliminary inferior turbinotomy, and then under general anesthesia, attacking the duct. It will be seen that all these procedures called for the resection of the anterior end of the inferior turbinate body and the opening of the duct.

In 1098 West began his work and until May, 1910, had done seven cases. The only difference in his work and that of the others just preceding him, was that he attempted more conservatism. Among seven cases, he found it possible in three, to push the sound down the duct, and dissect out the sound in the nose above the inferior turbinate body, thus leaving that structure intact. In the other four cases this was impossible for him to do; for the reason that he could not sound through into the nasal duct. Therefore, in these cases it was necessary for him to open the canal above the inferior turbinate and follow the canal up sufficiently high so that it was possible for him to pass a sound horizontally through the canaliculus, into the nose. He called attention to this operation in Washington and Berlin, and termed this the window resection of the nasal duct. In three of his cases he opened the sac as well as the duct. At this time he always dissected the sound loose in the nose and this procedure proved difficult.

In 1910 West read a paper before the Berlin Laryngological Society, and the paper was published in Fräenkel's Archives für Laryngologie, giving the technique of the operation as then done. In 1911 West returned to Berlin and again took up the work on the duct and sac operation. He then began to do nothing but the sac operation. It was very hard for him to get patients and up to July, 1912, he had done but 40 cases, and a number of these were shown to the Ophthalmological Society of Berlin. He then took up the work in the Poliklinik of Prof. P. Silex and



was able to secure an unusually large number of cases, so that in February, 1913, West described his technique before the Laryngological Society of Berlin, with a report of over one hundred cases. In April of that year he gave a demonstration before the Berlin Medical Society and at that time had done 119 cases. Up to December, 1913, he had a record of over 200 cases with a positive fluorescin test in 90 per cent. *The technique of the operation* is divided into four steps; a pre-

liminary incision of the lachrymal puncta having been made a day or so previous to the operation.

1. If the nasal septum is deflected in such a manner as to obstruct the view then a partial resection of the septum is made. It is preferable to do this from the opposite side from that on which you are to do the tear sac operation.

2. When the anterior end of the middle turbinate body is large and covers the fossa then it is necessary to resect the anterior portion of the middle turbinate.

3. The making of the muco-periosteal flap. This is made with the view of not alone providing a window at the floor of the sac, but also to gain room so as to properly view the parts to be attacked. Incision (a) is made rather vertically and high up. Incision (b) is made about one-half inch down, but parallel to incision (a). Incision (c) is then begun beyond the line of incision (a) and at right angles to it. This overlapping of the incisions is very important for it allows the parallelogram of muco-periosteum to be easily lifted without tearing. Incision (d) is then made on a line with the aperture pyriformis. Incision (e) is made parallel to incision (c-d), as shown, and crosses lines (a) and (b). Fig. 2.

4. Resection of the edge of the processus pyriformis is made when this structure presses too much toward the median line. To do this the bone must be denuded of its covering both internally and externally. Fig. c.

A preliminary anesthesia is obtained with cocaine and adrenalin and in the usual manner. An injection of a 0.5 per cent. solution of novocaine is made at the junction of the skin and mucous membrane and in the neighborhood of line (d). Fig. 2.

The parallelogram of muco-periosteum removed from the region of the fossa of the sac is placed in normal salt solution and at body temperature, and thus is saved for use in covering over the resected end of the middle turbinate, provided this structure has been attacked, and not then if there are any ethmoid cells that have been opened, the reason being that it would prevent drainage.

The torus lachrymalis is the name given by West to a very important anatomical landmark. It is caused by the floor of the sac pushing itself toward the nasal chamber and thus gives rise to a protuberance, and it is by this structure that one locates the position of the sac. The chisel is to be placed on this protuberance, in beginning the resection of the wall of the bone. The bone forming the floor of the fossa is removed; the operator holding the chisel firmly in place, while an assistant uses the mallet. Fig. 2A.

Upon getting the sac clear of bone, sufficient to make the desired resection, and having been careful to orientate yourself with a sound passed

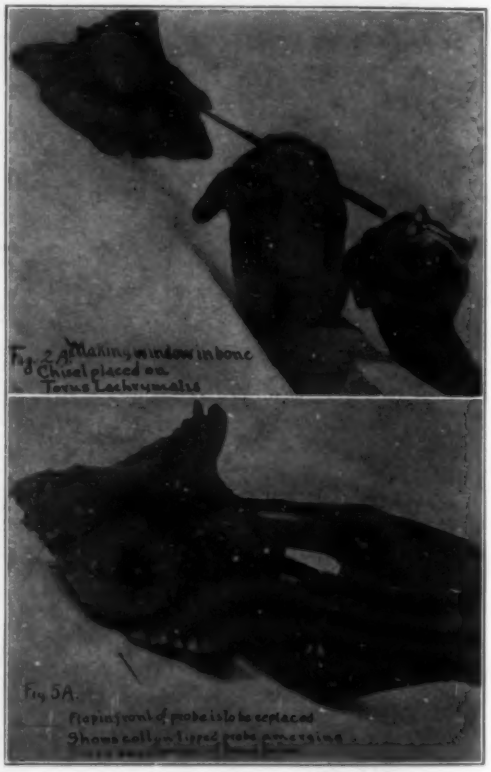


Fig. 2A. Making window in bone. Chisel placed on Torus Lachrymalis

Fig. 5A. Flap injured probe is to be replaced. Shows cell injured probe emerging

through the canaliculus and gently pressing the sac into the fenestra made in the bone (Fig. 3); you then reach in with the grasping forceps, and having secured a firm hold upon the wall of the sac, it is then resected. Endeavor to get away a good sized portion of the sac. Fig. 4.

The after treatment. Xeroform gauze packing is removed from the nose on the third day. Very little packing being used. Boric acid solution is then washed through the sac with a canula inserted into the canaliculus until it is seen to come from the anterior naris. On the third day, the

packing having been removed, sterile water is injected through the canaliculus to wash out all clots that have formed and the washing is kept up with injections every five minutes until such time as the water comes through clear.

An operation is not considered successful unless the "color test" can be secured. This consists of the following procedure. A 2 per cent. solution of fluorescin is dropped in the conjunctival sac, a piece of cotton having been previously placed on the middle turbinate body, and in a few minutes you find a fluorescin stain on the cotton, upon its withdrawal.

In several of my cases I have experienced difficulty in grasping the sac wall, in that when the probe was inserted and pressed inward the grasping forceps would engage the end of the probe as well as the sac. To obviate this difficulty I have had Mr. V. Mueller make for me a special punch forceps that works well in this part of the operation. The technique for this is the slitting of the sac well anteriorly and then press the lower blade of the forceps through this incision and punch out as much of the sac as is desired.

CONCLUSIONS.

The intra-nasal partial resection of the tear sac has many advantages, and they are most all of them for the patient.

1. A functionating tear apparatus is the foremost attainment.
2. There is no possibility of an external scar, nor the dread of one.
3. There is no epiphora following the operation.
4. There is no possibility of having to do a secondary extirpation of the lachrymal gland on account of troublesome epiphora.
5. Epiphora due to stenosis is permanently cured.
6. The operation may be performed while a phlegmon is present and with utter unconcern.
7. In view of the many advantages cited above, a prospective patient is very much more apt to accept the intra-nasal partial resection than they are the external extirpation of the sac.

INSTRUMENTARIA.

In order to do the work as outlined, it is quite essential that proper instruments be at hand, and for this purpose the firm of V. Mueller & Company have made the following: A right angled knife for making the incisions in the muco-periosteum in the vertical direction. A curved knife for making the longitudinal incisions. A universal handle for the knives. A straight and a curved chisel, the latter very essential for the initial attack on the torus lachrymalis. A mucous membrane elevator. A special grasping forceps that is used in a universal handle, thereby rendering it unnecessary to have right and left. A long handled knife with a thin cutting blade. A special punch forceps that can also be used in the universal handle.

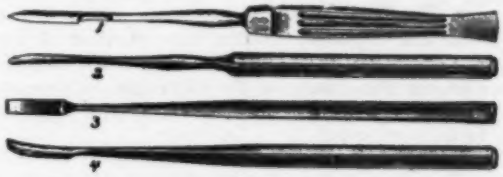


Plate 3, Figs. 1-4.

Plate 4, Figs. 5-7.

Plate 5, Figs. 8-9.

DISCUSSION.

Dr. H. S. Gradle, Chicago: I saw some of these cases in Berlin last fall, and I noted that fluorescin dropped into the conjunctival sac appeared almost immediately in the nose. There was no overflow of

tears, no matter whether the eye was irritated, as it was in one case with calomel put in, which would correspond to the wind condition out of doors. According to the reports from West and the Hirschberger clinic, it would seem that the results of this operation are more satisfactory than those of simple resection of the tear sac even as it is modified by toti. I have never done the operation, I have never had occasion to see it done, but I would like to see it because I think it is quite a satisfactory way to take care of the condition.

Dr. Harry Woodruff, Joliet: I would like to ask you, Dr. Clark, about the experience you have had with this operation, whether this operation is one that can safely be substituted for the removal of the tear sac preliminary to the extraction of cataract, whether you feel absolutely safe that your infective focus is removed?

Dr. Clark, Freeport (closing the discussion): It is to be regretted that so many of our confreres from Chicago have found it necessary to take an early train, and so my paper has suffered somewhat in not having the discussion promised. Dr. Norval H. Pierce was to have led in the discussion, but he had to leave early.

I have with me some wet specimens that I have prepared, which show, in a general way, what one aims to do in this operation; and to those who are interested, I shall be pleased to demonstrate the operation and show some instruments at the close of this session.

In answer to Dr. Woodruff. I am sure that this operation is of use and is indicated in tear sac and duct troubles as a preliminary to cataract extraction. Dr. West has performed the operation in the clinic of Prof. Silex in Berlin on various occasions as a preliminary to cataract extraction and it has proven a very acceptable procedure. As to its effectiveness in the removal of the infective focus; of this I am quite certain, as it is a matter of drainage, and this you establish beyond a question of a doubt. However, there are some contra-indications and they must be remembered and looked for in each individual case. Previous mention of them in my paper makes further repetition unnecessary. I thank you.

76 Stephenson Street.

THE FAMILY PHYSICIAN OF THE FUTURE.*

E. A. Cook, M. D.,

ALTON, ILL.

President's Annual Address.

"What do we live for, if it is not to make life less difficult to others."—*George Eliot.*

While attending our state meeting recently, I listened to some of the most able papers I have ever heard. During the delivery of these papers by those who know, we were filled with ambition to become a Norbury, a Sedgwick, an Eastman, a Billings or a Murphy; or to be able to accomplish the great work of any of these men, who are masters of their subjects. But on our return home we find ourselves, each in his little community, doing a work well and faithfully, that even these men mentioned can not do with satisfaction. We find ourselves among our friends, whose very minds and hearts we are privileged to know. What greater opportunity can we desire? In our humble places let us not forget the greatest physician, and with Kipling may we say:

Teach us to look, in all our ends,
On Thee for judge, and not on our friends.

I believe the time is at hand when we should cultivate the traits, customs and practices of the physicians of thirty or fifty years ago. During those times the doctor was the ideal in his community. He was authority on all subjects. He had an interest in church, school and state—yea—he assumed considerable activity in these. No school board then was complete without the thoughtful, painstaking man of the district, the doctor. State and Nation-wide government—not politics—received his attention and activities. The meager transportation facilities made it quite impossible for many of these men to serve their state and nation except at the ballot-box. However, the dignified, busy man always had a deep and sincere interest in all local affairs; his advice was sought on all perplexing questions. Today "Doc" is too busy to be troubled and he leaves to the ward politician the political and moral issues that have to do with his family and his home.

Although the family physician of old may in some instances have been somewhat profane and not strictly temperate in his habits, he was a godly man, a man of tender heart and feeling sympathy, truly a family physician. He was a man who enjoyed the entire confidence of those whom he served; he was a man who could instill hope in the dying; it was he who consoled the mourner and comforted the broken heart. The people today are longing for just such service. Shall we give it? If not, we are not enjoying the real pleasure and honor of being a family physician.

*Read before the Madison County Medical Society, at Godfrey, Ill., June 8, 1914.

Our American people have passed through the "patent medicine" era; they have discontinued the doctor who advertises; they are slower to try the "new doctor"; they are not so freely seeking the specialist. The display of brilliant instruments and apparatus does not appeal as it did a few years ago. Our people today are passing from a period of "fads", "isms" and varied arts of healing and are inquiring for the honest family physician. If I read the sign on the wall correctly, we must pause and consider what our people need most today. Let us develop the principles that so strongly characterized the never forgotten family physician. We must interest ourselves to a greater extent in every patient and his family. We must be interested beyond his physical ailments and the paltry dollar. We must know the husband and the wife as well as every individual member of the family; we must encourage the good will and counsel of our patients. We must render our services in a more tender, sympathetic manner and not so much as a cold business proposition.

I am sure that the simple, disinterested business view of the practice of medicine began about one and one-half decades ago, and during this time we would find as many different doctors practicing in some families as there were members in the family. This condition has been short-lived and I am confident it will soon be a custom of the past. Therefore, my impression is that it behooves us to set ourselves about to become the family adviser, the confidential friend of each patient we may meet.

Our profession is already regaining much of the dignity it formerly possessed. This no doubt is due in part to medical organization throughout the country. No body of men composed of such as the members of the Madison County Medical Society or any other county medical society, can come together without an influence being felt. Hence we feel that great good for the profession can be accomplished simply by our coming together. The man who enjoys social and intellectual intercourse with his fellow is the man who brings satisfaction and pleasure to those whom he serves. Our people are coming to expect the doctor to attend medical societies and meetings pertaining to his profession. They hold no ill-feeling, if informed, when his services are required, that he is on duty at some professional gathering. Even today many patients boast of and glory in the fact that their doctors attend such meetings.

Our ambition should be the greatest good for the greatest number and not the greatest number of calls in a given period of time. We differ but little as to the number of professional calls we might make during the day, but we may differ greatly as to the real value to humanity. We may have removed an appendix, we may have drained a gall bladder, we may have done even more technical, skillful work and thereby saved one physical life or relieved one sufferer and are soon forgotten. The man who by his very being, the "family physician" of the future, if you please, is blessing lives and homes, thereby establishing an everlasting memorial that becomes more splendid as long as time lasts, is the one whom the people praise and the great Physician above looks on with favor.

This is an age of preventive medicine and great educational movements. It is a time when our profession, by disseminating knowledge, is saving millions of lives in our country. Are we, the members of the Madison County Medical Society, doing our share? Have we done anything to merit the recognition and good will of the masses? If we are to realize anything, it must be the fact that all of us must study the great problems of preventive medicine longer and harder than ever before, and present them to the people and receive their co-operation if we would accomplish the greatest good to the greatest number. The doctor today is blessed as never before, with opportunities for doing good. At every turn we are greeted by invitations to instruct the masses, the rich and the poor, the old and the young, the man and the woman, the boy and the girl, collectively and individually. The social problem no doubt has had much to do in bringing us closer to our people and recalling the "family physician." This society feels proud indeed of its secretary for his very able and enthusiastic manner of presenting this important subject in the current issue of our "Madison County Doctor." May every one of us gather at least a spark of inspiration and make an opportunity to do some good for mankind; may we consider it not an irksome duty, but rather deem it a rare privilege, thus to serve the unwise.

May we not pause to note that each one of us is the only one in about one thousand people, who possesses the correct knowledge of such problems and who is capable of imparting it intelligently to the asking. If it is true that one thousand people today are under the personal supervision of you or me as regards their health and that of their offspring, are we not laden with a greater responsibility than we usually assume?

With the vast amount of valuable information that we possess pertaining to the social evil, in this teachable age, is it not just that we be held accountable for the manner in which we use this talent? The members of the Madison County Medical Society, like the county society which is our guest today, are men of high ideals, rare abilities and superior attainments and the people have a right to expect much at our hands. The application of this knowledge to the welfare of men lies with the physician. Because others are unprepared, this leadership becomes a duty we owe the community and ourselves. Unless we serve our several localities with all our powers, we do not deserve the esteem to which we are specially entitled.

In the onset I hinted that we should be in politics. We never lower ourselves when we stoop to raise another. The doctor, this family physician, by all means should be in politics. He owes it to himself to become conscious of the good he alone can direct. He owes it to the community that supports him to recognize clearly the purpose he should serve in that community. By the very nature of his occupation he should be in politics. Of all professional classes the doctors with their power of reasoning faculty are supposed to be the best balanced men known, and they of all people should hold to the principle of "the greatest good to the greatest number." As a group of individuals doctors are noted for their fairness, candor and honesty and politics would be better with them in it. Good physicians, the future family physicians, are square men and will not barter their influence for an unworthy cause. You men naturally examine into matters every day, exercising your rational faculties and deciding for the best. Doctors inspire honest ruling powers. They are always interested in education, sanitation and the betterment of the common weal. They are members of a most liberal profession, discriminating in their methods and knowing what is beneficial, they can discern the vicious from the good and act justly. They are natural leaders of affairs in their communities and their training makes them superior instructors in all civic affairs. Their neighbors look to them for guidance in local as well as state matters. Therefore, I say with all earnestness, you men, the family physicians of the future, get into politics. You do not need to stoop to the level of our present politics, but raise it to your standard. The country needs you just as much today as it needed the boys in blue in 1860. Apply your antiseptic treatment and see the jack-pots vanish. Your very presence in governmental halls will immunize those about you against the political slush-holes of infection that are demoralizing the people.

"I would be true, for there are those who trust me;
I would be pure, for there are those who care.
I would be strong, for there is much to suffer.
I would be brave, for there is much to dare."

Then, in conclusion, permit me to urge you to become in reality the family adviser, the family friend, the family physician, the one to whom the father, the mother, the husband, the wife, the son, the daughter, the groom, the bride may come with confidential matters, expecting sympathetic, friendly counsel. Become family physicians, the sociable, broad-minded, dignified gentlemen as were our preceptors.

Be it on the lecture platform, in the school-room, in the school-board, among the young people, in the city council, in legislative halls, in the sick-room, in the home, strive for the greatest good for the greatest number.

"A man is worth only as much as he is worth to his fellow-men."

THE CLINICAL SIGNIFICANCE OF BLOOD PRESSURE AND ITS RELATION TO LONGEVITY.*

ALBERT L. BRITTIN, M. D.
President Illinois State Medical Society.
ATHENS, ILL.

Of the various subjects which today occupy the attention of the medical profession there is perhaps not one of more importance than the con-

*Read before Central Illinois District Medical Society, October 27, 1914.

sideration of the pathological conditions which affect blood pressure. This subject is of two-fold importance to us; firstly, as physicians, in that the majority of our patients over forty-five years old die of some complication due to cardio-vascular disease; and, secondly, as a matter which affects us personally seeing that vital statistics show that the percentage of deaths from this same cause, between the ages of 50 and 60 years, is about three times as high in the medical profession as in any other class of the community. We are, therefore, both professionally and personally interested in everything pertaining to the subject that may guide us to a better understanding of the conditions which underlie a pathological or abnormal condition of blood pressure.

Hypertension is the condition with which we are mainly concerned. In an examination by Third,[1] he found, after excluding syphilitics, that a large majority of 200 business men, between the ages of 50 and 55 years showed definite hypertension; 75 per cent of women, aged over 35 years, show some hypertension, particularly at the period of climacteric. Under 35 years there is no such increase and we cannot say that the effect is physiologic. The condition of hypertension with which we are usually brought into contact is that which is associated with arteriosclerosis in elderly persons; although this latter condition is not always accompanied by high blood pressure, and may in fact occur with normal pressure or even with hypotension.

A blood pressure ranging above 150 mm. may be considered high. It may, and often does, reach as high as 300 mm.; over 200 mm. it may be considered as very high. Such very high blood pressure may occur at any age and has been observed even in infants. It may be due to heredity or other specific cause. Temporary causes such as pregnancy may cause a marked hypertension; but when a patient is continuously subject to hypertension it will produce an arterio-sclerotic condition in time.

Very high blood pressure is, however, usually noted as a concomitant of chronic renal, *splanchnic,* or aortic disease. Piersol[2] states that high blood pressure patients fall into one of three groups:

1. Those with chronic nephritis.
2. Those with arteriosclerosis.
3. A group of unknown origin, probably with localized vascular disease.

Nephritis of the chronic type and arteriosclerosis, usually associated in persons beyond middle age, are then the two conditions, or rather the conjoint condition clinically found accompanying a pronounced high blood pressure. Nephritis is a very important and common factor. In 50 cases of very high blood pressure examined by Piersol,[2] 21 were primarily nephritic and 27 were more or less affected by nephritis. Janeway in an analysis of 130 similar cases found 81 per cent. nephritic and 6 per cent. doubtful nephritis. High blood pressure is found more often accompanying nephritis than arteriosclerosis, and where arteriosclerosis is accompanied by high blood pressure it will almost invariably be found that the kidneys are affected.

As regards arteriosclerosis, or degeneration and hypertrophy of the arteries, as this is a condition which cannot sooner or later be avoided, we will consider it in some detail; as, in the absence of specific organic disease, it is the most important degenerative process affecting longevity.

When hypertension of the blood is due to arteriosclerosis alone, it usually occurs in one of two conditions;

1. In the earlier stages of sclerosis the hypertension is the result of spasm of the vessels.
2. If the sclerous process is far advanced the hypertension is due to secondary fibroid and calcareous changes in the arterial walls which cause a loss of elasticity and a thickening of the coats; this consequently narrows the passage available for the blood and necessitates its being driven at a greater pressure. This is the condition which we usually find in clinical examination of elderly patients.

The degeneration and atrophy of the arterial walls must be looked at as an inevitable process, which beginning perhaps at birth, continues throughout life and only ends in the grave; it is part of the general process of decay which accompanies senility; indeed it is in some measure an effort of the organism itself to provide a defense by a hypertensive condition of the blood not only for the weakened blood quality, but for the failing function of other organs. Nevertheless there is no reason why it should become pronounced in its effects until a ripe old age has been

attained. What we have to deal with today is premature sclerosis, to the fact that this destructive process is well established, from causes perfectly within our control, at least 30 years before its due time in a large percentage of cases. When we consider that it is only about his fortieth year of life that a man may be said to have reached the maximum of his physical and mental faculties; when he is best qualified to perform his life's work with judgment and efficiency; when we consider moreover that the time spent in the preparation is entirely out of proportion to the few short years during which the majority of men, having reached this epoch, find themselves in a fit condition for work; it does seem an economic waste of human effort which might to a great extent be frustrated; and it is a reflection on our capacity as guardians of human life that such conditions should continue.

I do not propose to discuss whether hypertension of the blood supply is the cause of degeneration of the vessels, or if the changes in the vessels produce hypertension. I believe that the altered condition of the vessels is due to changes effected in them due to altered conditions in the blood itself. According to Loeb[3] metabolic activity is favored by alkalinity of the blood; a condition of acidity and an increase in viscosity make it more difficult for the blood to flow through the arterial channels. The chief condition, therefore, which favors a state of hypertension in the blood is alkalinity. Besides, when the blood is in an acid condition, it will precipitate its soluble calcium as an insoluble calcium carbonate in the blood stream; these insoluble particles irritate the intima and penetrate the connective tissues of the media and thus set up the first process, irritation, the beginning of hypertrophy. We have, therefore, a double effect due to the acid condition of the blood, viz., calcification or hardening of the coats of the vessels by which their elasticity and power of expansion is lost and secondly a gradual thickening if the process continues which may ultimately obliterate the lumen.

What concerns us most particularly, therefore, is the nature of the factors which usually produce an acid condition in the blood. They are the infective processes due to the pathogenic microorganisms; intoxications of all kinds; persistent muscular exercise with insufficient removal of waste; excessive proteids; variations in the amount of certain of the internal secretions, etc.

To put the matter succinctly whatever is capable of producing a toxemic condition in the blood supply is a potent agent in the production of hypertension; and if this agent works long enough the hypertension of the blood will undoubtedly produce arteriosclerosis.

It is usual to say that a man is as old as his arteries. I prefer to say that a man is young and vigorous just as long as he is capable of keeping his blood free from toxins. The purity of the blood is the first, last and chief factor in regulating blood pressure and determining our longevity. This seems only a well-known truism, but call the failing process which terminates life what you will, let it be cardiac disease, nephritic complications, arteriosclerosis or otherwise—it is still no more than the effects of toxemia in the blood supply.

The various phases of arterial disease and the factors concerned in them have been dealt with so often and so ably and are so well-known to you that I will not detain you by dwelling on them; but there is one point which I think very important and which is not generally fully considered in connection with this disease. I refer to the secretion of the ductless glands, particularly the thyroid and the adrenals.

Lorand,[4] who has for many years been writing on the importance of these secretions in connection with the upkeep of bodily vigor and the warding off of defects due to the onset of senility, has in his book "Old Age Deferred," called particular attention to the importance of the thyroid secretions as the principal agent concerned with the destruction of toxins engendered in the body. He shows how close is the connection between the thyroid, kidneys and the liver; and that degeneration of the thyroid or suppression of its secretion generally brings about loss of functioning in these other glands.

The most important physiological effect of the thyroid secretions for the purpose of this paper, is that these secretions, the chief constituent of which is iodine, cause a diminution in the blood pressure. This is due particularly to the control effected by the thyroid in oxidation processes and

the elimination of the phosphates, wastes and toxins. The thyroid secretions are, therefore, most actively engaged in preventing a condition of acidity in the blood which as we have seen, is the precursor of hypertension. It is also known that thyroid secretions are antagonistic to the secretions of the adrenals. The adrenal secretions are known to produce acidity in the blood and consequent hypertension, and the factors which are known to be concerned with the production of hypertension, and consequent arteriosclerosis are precisely those which can clearly be demonstrated to produce hypersecretion of the adrenals.

Here then we have two well established clinical facts: 1, We know that if the thyroid secretions can be kept normal that they will, other things being equal, tend to prevent high blood pressure and the consequences due to it; and 2, we know that over-stimulation of the adrenals from whatever cause will induce high blood pressure and if continued will lead to arteriosclerosis and ultimate death.

Sajous[5] has recently pointed out the effects of adrenal secretions in the production of arteriosclerosis. He shows that all the morbid factors concerned in the production of this condition stimulate or cause overactivity of the adrenals. This secretory activity of the adrenals acts most speedily on the arterioles and reduces their caliber more or less. The medial and intimal vascular tissues dependent for their blood supply on the arterioles receive diminished nutriment and degenerate. When the coronal arteries become sclerous, there is usually faulty nutrition of the cardiac musculature and a degeneration which may produce a lowering in the systolic pressure. This condition is frequently met with in old people with advanced sclerosis of the peripheral vessels.

Infections and intoxications of all kinds are the factors that usually cause diminution or destruction of thyroid secretion. I have already mentioned the intimate connection between the kidneys and the thyroid. A nephritis will at once affect the thyroid; the uneliminated toxins will cause hypertension and hence the fact that arteriosclerosis is so often found associated with chronic nephritis. In fact, as Simon[6] puts it, hypertension is not the prime mover in the creation of arteriosclerosis, but it is an intermediate step between intoxication and renal insufficiency.

To come to a conclusion and a summing up of my remarks. Hypertension of the blood is the pathological condition most frequently met with particularly in old people. This condition is referable to an acid condition of the blood due to toxins or infections. This condition, which is assisted most powerfully, if there is an insufficiency of internal gland secretions, usually leads if continued to arteriosclerosis, and ultimate death.

REFERENCES.

Third: Canadian Med. Assn. Jour., 1913, iii, 261.
Piersol: The Clinical Significance of Extremely High Blood Pressure. Med. and Surg. Reports, Episcop. Hosp., Philadelphia, 1913, i, 181.
Loeb: The Dynamics of Living Matter, 1906.
Lorand: Old Age Deferred, Philadelphia, 1910.
Sajous: Monthly Cycl. and Med. Bull., 1913, vi, 228.
Simon: L'arterio-Sclerosis. Jour. de Med. et Chir. Prat., 1914, lxxxv, 81.

DIAGNOSIS OF INTRACRANIAL COMPLICATIONS IN DISEASES OF THE MIDDLE EAR AND ACCESSORY SINUSES OF THE NOSE*

JOSEPH C. BECK, M. D.,
CHICAGO, ILL.

The most important causes of intracranial complication from the middle ear and nasal accessory sinuses, are suppurations, consequently I will confine my remarks to that subject and not take up the neoplasms, trauma, etc.

In the diagnosis it is important to recognize suppurative disease of the ear and sinuses, but this subject is not within the province of this paper, so I will satisfy myself by mentioning only that the presence of the pus from the middle ear and nose, and Roentgenographic examination are the most important signs of affections of these structures. The one symptom more than any other on the part of the patient of a threatening extension into the cranial cavity, is localized pain or headache, which is very persistent instead of periodical. Especially important is this in connection with the cessation or diminution of the discharge. The knowledge of the pathological change present in the sinuses and middle ear and mastoid, is of additional value as for instance, tuberculosis, syphilis and cholesteatoma.

The frequency of intracranial complication in suppuration of the middle ear is much greater

*Read before the Sioux Valley Medical Association, July 23, 1914.

than that following sinus disease about twenty-five to one in my experience.

The intracranial complication which I will consider are:

1. Meningitis.
2. Sinus Thrombosis.
3. Brain abscess.

The MENINGITIS may be serous or suppurative and later localized or diffuse.

The sinus thrombosis may be partial or peri-etal and complete with or without involvement of the jugular bulb and vein. The brain abscess may be extra-dural or genuine, within the brain substance proper. The complications may be further divided as to bacteriologic or etiologic factors as:

Streptococcic,
Steaphylococcic,
Pneumococcic,
Tuberculous,
Syphilitic.

These complications may arise following acute, chronic and acute exacerbation of chronic suppuration of the ear and sinuses, meningitis and sinus thrombosis (this later condition is very frequently associated with a localized meningitis) are usually complications following acute or acute exacerbation of chronic suppuration of the ear and sinuses. Brain abscess, however, is most frequently associated with the chronic form of the ear and sinus disease. These, however, become more manifest following an acute attack of ear or sinus trouble. Tubercular and syphilitic meningitis are, however, chronic inflammations per se; but are also lighted up by the acute processes within the ear and sinuses.

The cardinal symptoms of any intracranial complications are:

1. *Pain or headache.* This may be localized or diffuse; it is, however, very persistent and quite intense. It is the recognition of this symptom that has helped me more than any other in suspecting intracranial trouble.

2. *Nausea and vomiting.* This symptom is quite constant, especially early in the disease and projectile vomiting is quite characteristic of intracranial pressure or irritation.

3. *General septic appearance.* This, of course, will vary in the different conditions under consideration, but in all it is quite manifest.

4. *The vision* is very frequently affected due to the choaked disk that is present.

5. *Temperature, pulse, and respiration* are very frequently disturbed.

6. *Definite focal symptoms* of brain localization are of the utmost importance in the diagnosis.

7. *Blood and spinal fluid examinations* give very valuable information.

8. *Roentgenographic findings* are at times valuable.

9. *Exploratory operation* and *treatment* as in lues are at times necessary to make a diagnosis.

MENINGITIS.

(a) Serous meningitis. One of the first signs is the increasing headache at first localized, usually near the seat of the perforation or path of infection, and soon becoming diffuse all over the head. The patient loses his appetite, his tongue becomes coated, the emunctories become sluggish in their action and nausea is a very common system. The temperature rises and if the septic form is going to follow, this rise is often quite rapid, so that there may occur small chills from the infection of the cerebrospinal fluid. The pulse and respiration rate is now considerably increased. The patient is very irritable, restless and does not sleep. As soon as the fluid increases within the cavity there is observed the characteristic syndrome of rolling the eyes, especially upward. The neck is drawn backwards and finally the leg upon the thigh and thigh upon the abdomen. Attempts to straighten them out are resisted and appear to be painful—Kernig sign.

Stroking the bottom of the feet with some semi-sharp instrument or the finger-nail will cause the big toe to turn up instead of down—Babinski sign.

Taking the head and tilting it forward against the chest, will cause the limbs to be drawn up—Brudginski sign.

All the other symptoms—as pressing over the peroneus nerve and muscle,—Gordon sign, which will cause the foot to be flexed, the stroking of the anterior tibial surface, Oppenheim sign, or the stroking of the region of the external Malleolus, Chaddock sign, will produce the same movement of the foot—all these signs, I say prove that the upper neuron is involved. The patient now will lapse into unconsciousness and be roused

with more or less difficulty to again relapse in the same condition. The pupils become sluggish in their action at first, becoming small, then irregular and finally dilated. Ophthalmoscopic examination may reveal a choked disk. Spinal puncture shows increase pressure by very frequently coming through the hollow needle with a spurt and is clear or slightly cloudy. Following such a puncture the patient is very often much improved for from one-half to a whole day, but the symptom soon return. A complete examination of the cerebrospinal fluid thus removed, will aid a great deal in diagnosis. This includes the following:

1. Remove about 25 c. c. at spinal puncture.
2. Make several slides and stains for organism, as septic and tubercular.
3. Examine and count the endothelial cells, leucocytes and pus cells.
4. Make cultures.
5. Make a Noguchi, butyric acid test for excess of albumin.
6. Make Lange colloidal test for excess of albumin.
7. Wassermann, Nonne and Noguchi test for syphilis.
8. Test for sugar.
9. Test for total acidity and relative acidity.
10. Cholin may be tested for.

In the serous form one will find the cells increased somewhat, especially the leukocytes, but the microorganisms are conspicuous by their absence.

The Lange (Colloidal-gold chloride) test will show the characteristic color reaction of a septic process.

The Noguchi (Butyric acid) test will be practiced. Excess of albumin.

The Wassermann, Nonne and Noguchi tests for syphilis are negative. (Unless such a case should be a complicated one).

The test for sugar is very important in that in serous meningitis sugar is present.

The relative acidity is not markedly affected and cholin is not present or if so in only small quantity.

(b.) Septic Meningitis. If this be *localized* and there be a collateral serous meningitis associated with it then the symptoms may be the same, as just described, however, the cerebrospinal fluid will show a greater degree of irritation and the fluid may contain some microorganisms. The majority or localized septic meningitis cases, however, are not as severe in their course as the serous or diffuse septic forms. The one important symptom is the localized headache, which is quite persistent, and the greater rise in the temperature. There are undoubtedly many cases of localized meningitis, that show a perfectly normal cerebrospinal fluid and most of the cardinal symptoms absent and these are the cases that usually get well or lead to extra-dural abscesses, subsequently.

The *diffuse septic meningitis* is the most discouraging intracranial complication that we have to deal with, and the diagnosis as a rule is not difficult. It usually is preceded by the serous form but within a very short time develops the graver symptoms of sepsis. The most positive symptom is the spinal puncture. The fluid comes out under pressure but not as great as in the serous form, and it is turbid. The turbidity varies in degree, to the amount of infection. It has the appearance at times of pure pus, in fact that is what it is. Bacteriologically one will find many microorganisms of the character of the infection and leucocytes or pus cells are very numerous.

The sugar reaction is always absent and the acidity is much increased as is the quantity of cholin.

The pressure or irritative symptoms, such as the Koenig and Babinski tests as well as the pupillary reactions, are practically the same as in the serous meningitis only that they soon give away to the paralytic form, namely pupils dilate, patient is in a constant stupor or coma and the involuntary urination and bowel movements become very manifest. The patient is as a rule unable to take or be given nourishment. The outcome is in my experience, with one exception, always fatal due to diffuse cerebritis. I have had a case of diffuse septic meningitis in the early stages of a pnuemococcic type, which I operated on by the Hayne's method of drainage of the cysterna magna, that recovered and I believe that the success in that case was due to the very early intervention because I have operated by the same method on eight other cases more advanced and of strepto and staphylococcus type of infection, that ended fatally.

SINUS THROMBOSIS.

This complication is the one that is recognized as giving the best prognosis because it can be very readily recognized and even exploration warranted to make such diagnosis. It most frequently follows or is associated with acute infections of the middle ear and mastoid process. The most important symptoms are the chills and fever of a distinct septic type and as a rule increasing in frequency. There is invariably a blood picture of sepsis, namely a very high leucoyte count and the polymorphonuclear type in marked excess. Blood cultures are as a rule positive of a bacteremia. If the process has extended to the bulb and internal jugular vein, then one may feel a thickening or cord-like mass along the anterior border of the sterno-clido-mastoid muscle. The fundus examination often reveals a choked disc especially on the side where the thrombosis is located. A symptom recently described by Beck of Vienna and Crowe of Baltimore and proven by me to be of positive value in several cases, is the production or increase of a choked disc by compression of the healthy internal jugular vein. Urbantschitsch has shown in quite a number of cases of sinus thrombosis that the blood clotting time is very much enhanced. This, of course, is true of any case of bacteremia or septic phlebitis anywhere in the body. I have proven this test to be of value to me in several cases of sinus thrombosis. The exploratory exposure of the lateral sinus is of distinct value and the only fact to remember is to expose a sufficient area so that one is able to deal with the sinus in case it be opened accidentally because such an accident when this precaution was not taken has led to serious consequences. The diagnosis of a thrombotic sinus when exposed is made first, by its discoloration, usually of a grayish pink. 2. It feels harder than normal and is not resilient when compressed; that is, it does not spring back. It however may be soft in case the thrombus has broken down and in cases of perietal thrombosis it may spring back because there is blood circulating through it. One will at times find a small collection of pus about the sinus, a condition known as, perisinus abscess and in many instances of this condition the sinus itself is not thrombosed. The puncture of the sinus by a hypodermic needle and attempt to withdraw some blood is not at present considered good practice owing to the danger of infecting a noninfected sinus. An incision is considered a wiser plan and subsequently packing both sides (torcular and bulb) which are thus shut off from the general circulation. There are many instances of secondary infection by embolism either in or about the joints and infarction into the lungs, spleen, pancreas, etc., with the entire train of symptoms from such complications.

BRAIN ABSCESS.

This is most frequently associated with chronic suppuration of the middle ear and mastoid, and labyrinthine disease. As stated before we must consider two principal types, namely those outside the dura and those within. They may exist at the same time or the intradural abscess, especially in acute exacerbations may frequently follow the extradural abscess. The paramount symptom is the great pain in the head most frequently localized to or in close proximity of the abscess. I have, however, found several instances where the patient located the pain in the anterior portion of the head and operation or post-morten disclosed it in the posterior cerebral fossa. This pain is not at all unlike that in brain tumor, and there are exacerbations in the headaches some times at night, or in the morning, and in one of my cases the patient would have about ten attacks of severe head pains within twenty-four hours and in the intervals be fairly comfortable. The next group of symptoms of importance are the focal lesions which will correspond to the anatomico-physiologic locations and actions. These focal symptoms will vary in degree in that they be either irritative or destructive. Thus a small abscess pressing over the motor area will cause clonic contractions on the opposite side of the body while a larger one will produce a constant contraction and a still larger abscess, especially if it be intra-dural, will produce paralysis of that portion of the body governed by that particular area. Again, if located in the cerebellar region, it will cause a train of symptoms of imbalance and loss of interpretation of direction which must be carefully differentiated from the irritation of the labyrinth. In this department much work has been done by Barany, Ruttin, Neumann and other Viennese, and many others, to make it possible to make a differential diagnosis and there is a great deal more to be done. One of the most important,

recent contributions in this regard is the pointing test of Barany's in connection with cerebellar lesions and the careful study and experimenting at every opportunity is very much recommended in order to familiarize oneself with this test. This in connection with the various labyrinth tests makes the differential diagnosis much more easy. One must remember that both labyrinthian irritation in connection with suppuration of the ear and cerebellar irritation from brain abscess may exist at the same time.

Intra-cranial pressure being increased in brain abscess will cause the cerebro-spinal fluid to be increased and found to be so by spinal puncture although no pus cells or microorganisms will be found unless there is also a concomitant diffuse septic meningitis or ventricular infection present. The ocular symptoms of intra-cranial pressure, as pupillary (often one large and one small) and choked disc, and usually present. The *pulse rate* and *respiration* will be affected as in brain tumor according to the size of the abscess. The larger the abscess the slower the pulse and respiration. The temperature as well as the pulse and respiration will vary as to whether the abscess be intra or extra-dural. Intra-dural abscesses will frequently cause considerable rise of temperature and acceleration of respiration and a remission when the process has become partially walled off. As soon as a fresh invasion of brain tissue takes place another rise of temperature etc., occurs.

Projectile Vomiting as in brain tumor, is quite frequently encountered.

The Roentgenogram, especially a stereo-scopic, will be of some value in cases where through its chronicity a change of bone by pressure has taken place or if one may follow the path of necrosis from the nasal accessory sinuses or the middle ear and mastoid process towards the brain. I will state, however, as I have stated on several occasions before, that not too much emphasis should be laid on the diagnostic value of the x-ray in intra-cranial lesions, especially abscess. I have been sadly disappointed in this great method of diagnosis (x-ray) and much annoyed at the positiveness of some observers without sufficient evidence.

Like in sinus thrombosis so in brain abscess one should not hesitate in the exploratory operation because waiting too long will often reduce the patient's ability to stand an operation later on. Should one not find the abscess then the decompression has done a great deal to prevent destruction of brain tissue by pressure; besides, the patient will be very much relieved of the severe head pains. This may be said also of spinal punctures. In this way one may wait for development of localization for another operation. In conclusion I would like to repeat the words of Prof. Newmann, as to the differential diagnosis between meningitis, sinus thrombosis and brain abscess. "A patient who has meningitis is one that wishes to be left alone and allowed to sleep although when roused is not particularly irritable. If he has brain abscess then he is constantly very irritable and difficult to manage while a patient who has sinus thrombosis, when he is free from the chills and fever, is very pleasant, apparently well."

X-RAY DIAGNOSIS.*

HENRY W. GROTE, M. D.,
BLOOMINGTON, ILL.

In attempting to employ any modality in the field of medicine or surgery it is incumbent that a fair understanding be had of the physical characteristics of such modality. This is not the time nor place to exhibit argument whether each ion or electron in an excited tube is one seventh-thousandth of a hydrogen atom or like theories, but we are much concerned with any means which will help toward a positive diagnosis.

To appreciate these characteristics then, the mention of a few of these principles will not be amiss. Passing by the source of energy we are most concerned with the x-ray tube. Volumes, mostly of interest to the Roentgenologist, have been written on tubes; suffice it to say now that they concern us greatly since they are very often cranky and greatly inefficient, and a tube depends for its value upon its power to send a beam of x-light through an object subject to the wishes of the operator.

This power will often vary during an extremely short excitation even in the hands of the most skillful operator.

X-light travels in straight lines—it cannot be reflected, diffracted nor polarized, and of great

*Read before McLean County Medical Society, May 7, 1914.

importance in diagnostic work, it penetrates all matter in inverse proportion to its density.

As to technique it is only necessary to mention that the object of which the radiogram is to be made must be clearly borne in mind, and the penetration power of the tube must be so considered and manipulated as to procure the kind of effect in contrast that is desired for the diagnosis. This will suggest to your minds the expediency of sending some clinical data with the patient when referring him to a Roentgenologist.

The diagnostic function of the x-light may for convenience be considered under two general heads;—fluoroscopic and radioscopic.

Since the emulsions on x-ray plates are several hundred times more sensitive than the retina, the radioscopic is the method of selection, excepting where movement is great, and even here the cinematograph is now being used.

You have referred a patient to Roentgenologist for a radiograph of a region or a part. After he has selected the proper tube and plate, has the patient properly placed, worked out the photographic details and presented to your inspection a negative, properly a Roentgenogram; of what diagnostic value might this be to you or your patient?

It should be superfluous to impress the necessity of practical experience in any branch of medical work, but the number of persons who seem to think they are or should be able to read any Roentgenogram simply as it were from first principles, impels the impressing of this point for the benefit of those who really wish to make the most of the very valuable assistance to be derived from a rapidly growing method.

This Roentgenogram is not a photograph, but is commonly called a picture. It is made by direct light and not by reflected light, so do not look for a so-called "likeness."

It is not a silhouette—a silhouette gives a shadow of the outline only, while the Roentgenogram reveals a series of superimposed and commingled shadows with lines of various densities.

Depths are suggested to the trained eye and contour is finely portrayed in stereoscopic views.

Neither is Roentgenography, geography—the regions are not mapped out with the names of the structures engraved in the various locations.

The Roentgenogram is a fixed record and is always original evidence and can be re-examined at will. It shows finer details and contrasts of shadow than can be noted by the naked eye.

The Roentgenogram does not show any positive evidence of disease—it shows departures from the normal and in most cases should be considered in conjunction with other observations and methods of diagnosis.

Density of shadow is a point to be remembered in reading a negative. A negative as the name implies shows in density the reverse of relative densities of the region exposed.

When dense tissue such as bone in interposed between the tube and the sensitized plate, much of the x-light is prevented from reaching the plate and a shadow of the bone is the end result; around the bone is the muscle of less density, which impedes the light less, hence less shadow; such are translucent. Again, air filled organs offer still less resistance to the ray and are practically transparent, and allow great chemical action on the plate and the result is a dense opaque image of that tissue. Thus clear transparent parts of the negative correspond to dense tissue and opaque shadows to translucent and transparent tissue—between these are all gradations from one to the other. All this leads to the relative shadows or contrast and means normal conditions or abnormal change.

Since the penetrative of the tube is not constant, shadows are not standardized, so it is often desirable, when any question arises, to expose the opposite part under exactly the same conditions.

Determining which side is right or left in the Roentgenogram may be impossible, but if advised as to position of patient or part, it is not difficult.

Exact dimensions of a part are not possible, unless we wish to enter a complex problem in perspective or triangulation, considering the eye in the position of the tube. This process is not practical in ordinary routine work and finds its best application in locating and measuring foreign bodies—particularly in the eye.

Stereoscopic views give the best dimension results in ordinary work, since then we have the relative position in space and relative size by comparison, and stereoscopic views are valuable as they give the surgeon correct anatomical relationships.

Examinations of the bones and joints form most of the routine work of x-ray laboratories and is much relied upon, so much so that as one writer expresses himself: "so definite and useful is the evidence thus obtained in obscure injuries, that we can well understand the fear that younger surgeons may learn to depend upon it to the exclusion of other methods of diagnosis of which it is well that they should also gain experience."

In fractures without displacement is found an instance of the value of the radioscopic method over the fluoroscopic. With the fluoroscope such a condition may easily be overlooked.

Comminuted fractures and fractures in the vicinity of joints are difficult, but x-ray diagnosis is the best method we have since other methods leave an uncertainty between fracture and dislocation or a combination of the two.

In joint cases in children the epiphysis and unossified cartilage must be taken into consideration.

Fractures at the base of the brain, bones of the face, laminae of the vertebrae and ribs should always be made stereoscopically, as a single view leads to error.

In diseases of bone the relative shadows of various parts of the same bone suggest departures from the normal; thus rarefication suggests tuberculosis and sclerosis old inflammatory conditions.

Forms of periostitis are shown by a lifting or separation of the periosteum from the bone. Osteo-periostitis shows an additional thickening of the bone substance.

Syphilis of bone is more dense than tubercular bone. The shadow of sarcoma of bone is less than normal bone and early is hard to differentiate from syphilis, but later becomes irregular in density while gummata continue with their fairly regular density and later eburnation showing a very dense shadow.

Epiphyseal disease and rickets may give some trouble, but rickets gives a fairly clear but irregular outline, while in epiphyseal disease the outline is obscured.

Acromegaly is shown to be the enlargement of the extremities, and the group of bones forming the base of the brain and particularly of the sella turcica.

Joint diseases are fairly easy in the later stages, as then the bone outlines are not sharp and show a characteristic "fuzziness." The earlier stages are evident by a cloudiness in the fluid contents and here again it is very useful to take the opposite joint for comparison, when a difference in the articular surfaces is seen. Osteo-arthritis shows more distortion, and a tubercular joint usually shows disease in a nearby bone or periosteum.

Radiograms of ankylosis are not needed for diagnostic purposes as far as motion is concerned, but we can often learn the extent of ossification of bands of fibres and adhesions, and we know whether to keep out of the joint and are able to suggest a reasonable prognosis.

The discovery of loose bodies in the joint depends on their formation. Normal cartilage is transparent to x-light. Foreign bodies such as wood, glass, etc., can easily be seen.

Gout, while not being strictly a joint disease, should be differentially considered here, the gouty deposits being found on the bones and not in the joints and with sharp outlines, while in rheumatoid arthritis are seen the erosions of the articular surfaces.

Adhesions are translucent and difficult, but often the presence of shadows in abnormal places will suggest them.

Pus will exhibit a shadow and obscures outlines of parts while blood casts a denser shadow. Serous effusions rarely are diagnosed, but often suspected, because they cause pressure or dislocation of a part.

In the diagnosis of diseases of the chest, the x-ray is of great service and recently a number of operators have developed a good technique on the premise that practically all chest diseases are the result of pressure or variations, and dependent on the factors of light, shadow and motion.

Healthy lung is translucent, shadows of the scapulae, axillary folds and nipple soon become familiar, and being movable outside of the chest wall, enable their elimination from inside disturbances.

Advanced tuberculosis casts definite shadows—the more advanced the disease process the denser the shadow. Cavities are indicated by light areas in dense shadows; if calcification has occurred a

ring will be seen around the light area. In practically all cases of pulmonary tuberculosis the excursions of the diaphragm are irregular, that part on the affected side being the more rapid and limited. Empyema and abscesses are here to be differentiated, if of long standing the dense pus shadow will help and a joint consideration with the clinical findings will lead to a correct diagnosis.

The heart must be considered with the lungs; any displacement of this organ can be noted and variations in size readily found. An ingenious instrument called the "hear-see" has been devised. It is a type of stethoscope to be used with the fluoroscope. With the diaphragm of the instrument on the point where the heart shadow crosses the shadow of the fourth rib, the heart pulsation should be synchronous with the apex beat. Pericarditis is commonly diagnosed. Adherent pericarditis limits the heart motion and pericarditis with effusion casts a shadow around the heart shadow proper.

Aneurisms are readily diagnosed. Monnell states that this method of examination gives us greater assurance of the absence of an aneurism of the aorta in suspected cases than by any other evidence we have. Williams says that aneurism may be seen before there are any physical signs.

Mediastinal lesions are usually dense and differentiated by motion or lack of motion, and they usually displace other organs.

Foreign bodies in the chest have the same consideration as elsewhere—inside or outside the chest wall being the point necessary to determine.

Below the diaphragm in the abdominal cavity much research work has recently been done with the aid of the bismuth meal, the hollow viscera not being subject to x-ray shadow independently. It must be remembered that here is shown the silhouette only.

Size, position and motility of the stomach, attempts to differentiate between ulcer and carcinoma form most of the routine abdominal work and with correct technique is a most excellent means of diagnosis.

The literature on x-ray work of the gastro-intestinal tract has become so extensive that it is impractical to analyze it. Each has his own technique and until recently has had his own nomenclature.

Every person has his own stomach, and the size, position and motility must be reconciled to his own physique and needs.

In attempting to diagnose gastric ulcer without the aid of the aspirator, the capsule of Schwartz is employed to determine the amount of free hydrochloric acid.

It is made of gold-beaters skin of known thickness and size containing a known quantity of pure metallic bismuth and pure neutral pepsin. The time required to liberate the metallic bismuth estimates the degree of stomach acidity. Two and one-half hours represents the normal time; more or less suggests hyperacidity or subacidity according to the elapsed time. Anacidity is considered present if the capsule remains undigested for more than five hours.

Motility of the stomach is watched by the aid of the opaque meal; changes in the position and emptying time when studied together furnish a very accurate method of estimating functional efficiency.

The time for the emptying of the stomach in persons who have never complained of any dyspeptic symptoms has been found to vary from one and one-half to six hours. This great variation of time shows the lack of a standard stomach.

Gastroptosis may give rise to distressing pressure symptoms, and being a wonderfully great reflex organ, the stomach is made to shoulder the blame of a symptomen complex of visceroptosis. How much it is to blame can be shown by changing the position of the patient after the ingestion of an opaque meal.

The x-ray differentiation between gastric ulcer and gastric carcinoma is always an important one. In gastric ulcer is seen the hour-glass contraction and a peristaltic spasm. In gastric carcinoma the stomach silhouette is blurred by a fairly dense shadow presenting the peculiar finger mark outline. It also usually moves with the stomach.

Duodenal ulcer causes interference with the proper emptying of the stomach, usually hastening it, either because it prevents proper closing of the pylorus, or by reflex irritation. It then captures a part of the opaque meal giving the Roent-

genologist the shadow and adhesions if any, helping to hold the shadow for a time.

Roentgen diagnosis of gallstones is rarely made as only about 40 per cent. of gallstones cast a shadow; this reduces Roentgen findings to about 10 per cent. in all cases.

The following of the opaque meal through the intestine is productive of interest and exhibits optotic conditions and peristaltic interference. The x-ray has shown Lane kinks so often that some consider them of small pathological interest in the majority of cases. Dilated gut and especially dilatation of the cecum is commonly found, and the colon is nicely studied with the aid of the opaque enema.

X-ray discovery of neoplasms of the pancreas have been written about and suggest the future diagnostic ability of x-light.

The finding of an enlarged spleen in cases of leukemia, results in diagnostic satisfaction.

Kidney shadows are very common; size, form, and movability readily diagnosed. A kidney rotated either on its long or short axis is diagnosed. by pylography, a silver salt being used in solution for filling the kidney pelvis and then exposing it to the x-ray.

Renal calculi always cast shadows, and if present and not seen the fault lies in the operator's technique. The same may be said of cystic stones. The location of a stone in the ureter can easily be overlooked.

In thus presenting the ordinary use of the Roentgen method of diagnosis, I wish to remind you that many fanciful happenings occur in an x-ray laboratory and the reports of these are very apt to prejudice the minds of readers.

Roentgen diagnosis is not to be considered a rival of other clinical methods but a strong ally.

It is a method of inspection direct by the fluoroscopic method and inspection by proxy if you please by the radiogram.

All information obtainable by x-ray cannot be secured in every case; some cases present difficulties wholly absent in others.

Much information may be obtained by x-rays alone.

Much is often shown on radiograms, which is not as yet interpreted by the most expert, and immediate and great proficiency is to be expected.

THE CARE AND TREATMENT OF COMPOUND INFECTED FRACTURES.*

RODNEY J. BUNCH, M. D.,
TABLE GROVE, ILL.

The remarkable advance in the knowledge of bacteriology which has taken place in recent years has shed much light on the treatment of wounds. It is not my aim or purpose to go into the details of this historical phase but rather to consider briefly the rational method of treating an infected open fracture. Such injuries are quite common. Every doctor will meet them at some period in his practice and I know of no class of injuries which will give one more concern from the time of the first visit until nature has healed the member.

A compound fracture is one which communicates with the external world through a wound of the soft parts and when infected is accompanied by all the risks consequent to suppuration of bone and soft parts, together with a systemic reaction.

The cardinal principle in treatment is to arrest the infectious process at the earliest possible moment and prevent further invasion of micro-organisms and destruction of tissue. There are two broad classifications of compound fractures: 1. Those caused by direct violence. 2. Those due to indirect violence or from within outward. I mention these because it has an important bearing on the probable management of wounds to soft parts and our method of reduction and retention of the fracture. In the fracture by direct violence the wound is usually large and adjacent tissues contused and devitalized, offering little or no resistance to micro-organisms, and it is in most cases accompanied by extensive slough.

The picture is quite different to those met with in indirect violence, where the infection is more limited. The keynote of success in the treatment of all compound infected fractures I believe, lies in proper drainage together with rest and proper after-treatment. Our efforts are often unsuccessful in trying to do too much with a fracture when the process of infection is being limited by nature. We should always determine, if possible, the manner in which the injury was sustained,

*Read at the meeting of the Fulton County Medical Society, July 1, 1913.

briefly outlining to patient and relatives the nature and gravity of the injury, and make a careful prognosis. Some inquiry should be made with reference to occupation of injured persons. In all compound infected fractures from direct violence, antitetanic serum should be used to immunize the patient; 1,500 units usually suffice.

GENERAL TREATMENT.

Each case perhaps, needs a definite line of treatment and I shall only speak of the measures in a general way. In every open wound there is regularly an escape of fluid rich in albuminous elements corresponding in amount to the size of the wound and we must provide suitable channels for the escape of this drainage in some form. This brings us to the consideration of material for drains, and their application. Of the many forms of tubes which have come into use probably the most practical is the rubber tube through whose lumen gauze wick has been passed and anchored by sterile safety pins to prevent its escape or displacement. The tube should be fenestrated in order to allow the gauze to come in contact with the secretions on all sides of the tube, thus facilitating drainage.

Whether the hard or soft rubber tube shall be used will be determined by the position which the tube must occupy. If it is necessary to bend your tube the soft tube is preferable. Glass tubes are not so satisfactory as the rubber, owing to their liability to break. Aluminum is fairly satisfactory, but hard to bend and cleanse, hence more or less objectionable. Generally speaking, all compound infected fractures should have at least one through and through drainage tube supplemented by a gauze wick to prevent its collapse. However, when the glass or the aluminum tube is used this is not so essential. When gauze drains are used they should be covered with rubber tissue in order to prevent adhesions and facilitate their removal; it also allows the pus to escape by capillary attraction and prevents the meshes of gauze sealing together as they soon become saturated with secretions. Should this happen your drain is a detriment, as it dams back the pus.

Rubber tissue and gauze rolled into the form of a cigarette are quite satisfactory for drains as such material is usually at hand and costs less than strands of silkworm gut. The question of time that drains should be left in place must be governed entirely by the progress of the case; as long as pus escapes an exit must be provided. My custom has been to gradually remove them as soon as the general pus accumulation about the wound begins to lessen and the systemic reaction of patient shows marked signs of abatement. Each day after this the drainage tube is lifted and a small portion cut away till, finally the entire tube is disposed of.

Every compound infected fracture should have iodoform gauze or a similar kind packed loosely about the drainage tract. This acts as a germicide, promotes drainage and stimulates granulation.

"Shall a compound fracture be irrigated, and, if so, what is the best method, and what solution shall be used?"

So many antiseptics have come into use within the last twenty years, one dare not attempt to discuss them in detail and I shall only speak of the more important ones.

The so-called aqueous solution of iodine most nearly corresponds to all the requirements, namely, it is germicidal, acts quickly, is relatively non-toxic, easy of application, and moderate in price. Potassium permanganate and bi-chlorid find many advocates and where extensive tissue necrosis has taken place their de-odorizing power must be admitted and I have found them most useful. Lysol in 0.25 per cent. to 2 per cent. aquous solution is an excellent and relatively non-toxic antiseptic, and on account of its cheapness and non-poisonous character is well adapted for disinfecting and cleansing purposes instead of carbolic acid. Peroxide of hydrogen is not so satisfactory owing to its unstable character and is rather expensive.

We recognize that an absolute success in an antiseptic has not as yet been obtained, and when one is in doubt as to the solution to use, it is a good plan to use the ordinary saline solution.

Only in severe infections should daily irrigation be kept up, and then care must be exercised lest too much force is used. This has a tendency to break down Nature's protective wall, and allows infection to spread. My custom has been to irrigate by the saline drop method, when the injured member can be suspended or fixed on a rubber cushion or pad. Such a method will be

found excellent in those injuries involving joints, shaft of femur, humerus, hands and feet. This allows as nearly perfect and continuous drainage as possible and unquestionably preserves the patient's vitality and has a tendency to shorten the infectious process. An ordinary fountain syringe with rubber tubing and clamp is all that one needs to carry out this treatment. The injured member must be either suspended in a suitable open splint, or laid upon a "Kelly pad," or cushion. If you don't happen to have this, ordinary rubber sheeting or oilcloth will answer quite well. This is essential to avoid soiling bed linen and wearing apparel. A bucket, or slop jar is placed at the side of the bed to receive the solution as it drains from the valley or trough of your rubber. With the fountain syringe elevated three feet after being filled with a solution whose temperature should be such that the hand can be held in it with some discomfort, by the time it has traveled through the length of the tube it will be tolerated by the patient fairly well. The syringe should be refilled from time to time with a new supply of warm saline solution, and where we have access to an electric current, the ordinary electric light bulb can be placed in the syringe and in this way solution kept warm. After you have kept up the irrigation for several hours, you will notice a fall in the patient's temperature and pulse rate. The clouded mentality and delirium will begin to clear up. You may then discontinue the irrigation for three hours, and allow your patient to rest. At the end of this time resume the irrigation. The time irrigation should be kept up will have to be governed by the severity of the case, usually from three to five days being sufficient. I have used this method in such severe cases of sepsis and delirium that restraint of patient was necessary and the results are gratifying. I have purposely omitted the tabulation of cases and review of the literature and have tried to give you my personal observations and experience during the four years of my service at the St. Louis City Hospital and three years of private practice. I have not touched upon the subject of stimulants, nourishment, saline transfusions and irrigations per rectum, nor do I wish to discuss the subject of treatment with serum and vaccines. Such complications as general sepsis, tetanus, gangrene, thrombosis and embolism, delayed union, neuritis, malignancy and muscle atrophy I have not spoken of, as they are well treated under standard text-books of surgery and internal medicine. Such infections as lues, tuberculosis, and malaria, when complicating a fracture must be treated along medical lines, and it is not my province to discuss them at this time. Each fracture should be reduced and kept there at the earliest possible moment; but in a compound infected fracture we must remember that we not only have a fracture to deal with, but a septic process as well, together with its destructive action on bone and soft tissue. In the reparative process marked changes occur in the marrow and periosteal cells and there is abundant granulation tissue, bone softening occurs, and the disappearance of lime salts by absorption. The problem of overcoming the muscular rigidity is an important one, and in the late un-united fracture often very difficult to deal with.

AFTER-TREATMENT

is often more important than the early or primary treatment and little mention is made of it in a general way in our standard text-books. You will be convinced of this if you examine a few healed fractures whose results from an anatomical standpoint appear to be good, but the joint may be ankylosed, which I believe is due in a large number of cases to our failure to carry out the proper after-treatment. D. C. Smith has said that a good functional result after a fracture is better surgery than an anatomically perfect one with little or no function. Murphy and others have been able to correct such conditions with a fair degree of success by operative interference. However, it is far better to prevent this unpleasant state of affairs by proper early treatment along the line of massage and passive motion.

Just at what time and how much of these measures are to be used will be determined by the case in question. Massage should be as nearly free of pain as possible and should be begun as soon as the swelling and inflammation shows signs of subsiding and keep it up for some time after the appliances have been removed. This prevents adhesions and contractures, hastens absorption, and improves muscle tone. Generally speaking fractures near and involving a joint should have early cautious massage. Do not

wait till force is required or a surgical procedure is necessary to relieve a stiff joint. In conclusion I wish to state that one's own judgment in the large number of cases must play an important part in the handling of these cases, and even then one is taxed to the utmost, which at times will be aggravated by a stubborn patient or an anxious relative.

INDICATIONS FOR THE USE OF PITUITARY EXTRACT WITH REPORT OF CASES.*

HARRY LEE HOWELL, M. D.,
BLOOMINGTON, ILL.

Having employed pituitary extract fairly extensively covering a period of two years or more, I come to the conclusion that its indications may be briefly summed up as existing in all cases of prolonged labor from uterine inertia or uterine contractions of insufficient expulsive force, with the exception of the cases in which there is some mechanical obstruction or other marked abnormality which constitute the contra-indications and which will be mentioned as such, at a later time.

In addition to this, it will be found of service in cases where it is necessary to induce labor either at once or before term, other things being equal, in post-partum hemorrhage at term, or in hemorrhage during a miscarriage, and while not so positively active may be tried as an emmenagogue, where emmenagogues are needed.

I have also in one instance used it with good effect in conjunction with gastric lavage, in a case of post-operative intestinal atony threatening acute dilatation of the stomach, although it is difficult to determine how great a percentage of benefit obtained from the lavage alone.

There are also other indications claimed for it, but as my experience with it has been limited chiefly to obstetrical cases, I shall confine myself largely to its uses in this particular branch of our work.

I wish to make it clear that I in no wise pose as being authoritative in the use of this product, but trust simply that the report of a few cases in which I have used it may prove of interest to those who may not have adopted it, and from those who have I shall be glad to receive either corroboration or less satisfactory reports.

I sometimes think we are too ready to take up and experiment with new preparations, and yet there is the possibility of the other extreme, of our being too slow to do so and falling into the habit of criticising or condemning new procedures without having investigated or in any manner tested their virtues, and I know of no better way of separating the wheat from the chaff than that of frankly comparing results.

Case 1. The first case I wish to report is that of Mrs. T. P., a large primipara, 22 years of age, with a history of kidney trouble, and one of the few whom I have had any difficulty in persuading to submit regular specimens for urinalysis.

There was every reason to believe that she had gone three weeks over time. I was called to see her and found her complaining of great nervousness, headache, dizziness, insomnia, and scanty urination.

Examination revealed a living child in normal position. Pelvic measurements above the adequate, extremities enormously edematous, the ankles measuring thirteen inches. Temperature normal, pulse full and bounding, membranes intact, and no cervical dilatation. Specific gravity of urine 1010 and loaded with albumin.

The patient was, of course, on the verge of eclamptic convulsions, and I immediately decided to send her to the hospital and induce labor. At about 11:30 a. m. I dilated the cervix slightly, tightly packed it with gauze and administered one tube of pituitrin, with no results in the way of pains. At 9 p. m. I gave a second tube of pituitrin with good results in fifteen minutes. At 2 a. m. removed the gauze pack, which was lying loosely in the vagina, and found complete cervical dilatation with head half way out of cervix, pains frequent and severe. At the end of another hour, the occiput making slow progress under the symphysis, applied low forceps and easily delivered in fifteen minutes. Repaired a slight tear of the mucous membrane with one silkworm gut. The baby was alive and healthy. After delivery the mother's eclamptic symptoms rapidly subsided after using copious saline enemas, and an uncomplicated convalescence ensued.

Case 2. Mrs. D. G., primipara, 20 years of age. Light nagging pains started in the early morning, eight days before the approximated date of labor. Pains continued light and irregular for eight hours, accomplishing nothing but fatigue to the patient. The presentation and measurements being normal, I administered pituitrin at 11 a. m. with very prompt increase in character and frequency of pains. At 2 p. m. complete cervical dilatation, with head entirely out of cervix. From this point, however, the progress was slow in spite of good adequate pains. At 3:30 p. m. the fetal heart tones becoming indistinct.

*Read before the McLean County Medical Society, June, 1914.

I feared trouble and decided to terminate labor with forceps. This, to my surprise, I found rather difficult for low forceps. Upon accomplishment of delivery of the head, however, the difficulty was explained by rather an underlength cord twice around the neck which, I am sorry to report, resulted fatally to the baby, as all attempts at artificial respirations failed to resuscitate. Mother's recovery was uneventful.

Case 3. Mrs. E. D., primipara, aged 23 years. Indications for the use of pituitrin in this case very similar to those in case 2, except that the light, irregular pains extended over a period of two days with six and eight hour intervals of complete cessation. In the evening of what constituted the beginning of the third day, pituitrin was administered with remarkably prompt results, pains increasing in about six minutes. At 1 a. m., owing to the fatigue of the mother due to the forty-eight hours of irregular labor preceding the administration of pituitrin, low forceps were applied and the head assisted under the symphysis. Child was alive and strong and the mother's convalescence normal.

Case 4. Mrs. P. C., multipara, aged 25 years. This was a case of premature labor, the membranes rupturing in the absence of any pains Dec. 21, 1913, during the seventh month of pregnancy. Patient was sent to the hospital and for a period of four days there were light irregular pains for two or three hours with intervals of from six to twelve hours without pains. On the afternoon of Dec. 24 there was only about two fingers dilatation. One tube of pituitrin was injected and good pains ensued in about three minutes. In exactly one hour a four and one-half pound male child was delivered spontaneously. Child lived four months; mother's recovery was normal.

Case 5. Two-para, aged 25 years. Pains nagging and irregular for about fourteen hours. Presentation normal. Dilatation three fingers. Pituitrin was administered and pains became severe within two or three minutes. Spontaneous delivery of a normal sized, healthy child in an hour and thirty-five minutes.

Case 6. T. S., primipara, aged 34 years. Five days past due, membranes ruptured spontaneously without pain and while patient was sleeping at 12:30 a. m. Pains set in about 3 a. m., becoming fairly severe and regular by 7 a. m. At 8:40 pains only three or four minutes apart. Examination revealed internal os well effaced and about two fingers dilatation, but during a pain it was found that the head, which was normally presenting, was not engaging well and remained two inches above the cervical ring, no fluid escaping. Pituitrin was administered, and a strong healthy child was spontaneously delivered without laceration at 11:40 a. m. Convalescence normal.

Case 7. Mrs. C. B., multipera, aged 26 years. This was a case of incomplete miscarriage at about the second month. I was called on account of a severe hemmorhage in the early morning. Found the patient very pale and almost pulseless. Bed saturated with blood and still bleeding profusely. Just as I arrived patient fainted for the fifth time. Pituitrin was injected and the uterus very gently curetted with a blunt curette and placental forceps without anesthesia. Considerable placental tissue and membrane were obtained, after which the uterus was tightly packed. No further hemorrhage occurred and further progress of the case was normal.

Case. 8. A case of delayed menstruation into which I knew positively pregnancy did not enter. Severe cramps which are always present in this particular case and an otherwise normal menstruation started within fifteen minutes after the administration of pituitrin, which was purely an experiment and the first time I had ever used it to meet this reqnirement. Recently I have tried it again as an emmenagogue in a patient aged 42 years who, I am satisfied, is entering the menopause and who was having all of the congestive phenomena of this condition, but with disappointing results, as two injections twelve or fourteen hours apart produced no results.

The contraindications to the use of this preparation are any mechanical obstruction or other abnormal condition which makes delivery through the normal channel in the least doubtful, viz: contracted or deformed pelvis ,abnormal presentations, multiple pregnancy, etc., and I believe that ordinarily it is best not to use it during the first stage of labor. I would never use it in a primapera in the absence of pelvic measurements, and to use it in a normal case that is progressing satisfactorily without it, is obviously useless.

The only criticism I have heard on the use of it is that cases have been reported, very few in number, of rupture of the uterus. I can well believe that this is a possibility if there is any obstruction in the canal or any presentation which could not be reasonably promptly overcome by the use of forceps as an adjunct. One criticism that I might possibly add is perhaps a slightly greater tendency to cervical laceration, although such has not been my experience.

In conclusion I will state that pituitrin has become a portion of my armamentarium. I would almost rather go to a confinement case without my forceps than without it. I do not believe that it can ever take the place of forceps entirely, but I think it reduces the percentage of cases in which they have to be used; that it makes forceps deliveries easier where they do eventually have to be applied; that it minimizes post-partum hemorrhage, and furnishes an excellent means of controlling them after they start; that patients who have it, show less fatigue following labor than those who do not; and that

many patients by its use may be saved many hours of weary heart-breaking suffering.

SOME OF THE COMMON CAUSES OF SLOW AND DIFFICULT LABOR.*

E. L. Brown, M. D.
BLOOMINGTON, ILL.

No attempt will be made in this paper to review all the causes of difficult labor, but only of such as have fallen to my lot to deal with during the year 1913.

First: Weak or insufficient pains. The uterus may be small and not have sufficient muscle power to do efficient work, or the cervix may be long and rigid, or the pains may be wild and irregular. The woman may hold back or resist through fear, or she may be one unduly hypersensitive to pain, and scream, toss wildly about before any real good labor pains have begun.

The weak pains may be helped by quinine early, later by ergot. A rigid cervix may need some help in dilating by the fingers patiently assisting. The fearful should be encouraged, and the hysterical left to themselves until help is really needed.

One case that I saw had extremely hysterical contortions. These were controlled by H. M. C. gr. 1/8 at first. Later chloroform with each pain kept her reasonably quiet. Sometimes a very little chloroform will take away all the nervous fear and secure the patient's help.

Second: A transverse position of the child may delay labor for hours or days. In those cases, where the physician is not called until labor is well advanced, a woman may wait until a shoulder is pushed well down into the pelvis. Any physician can readily diagnose and correct this trouble if called in time, but it is sometimes very difficult to turn after the waters have broken, and the more so the longer the case has been left to nature. I saw one case left by a midwife until the child was dead, and a shoulder presenting at the vulva. Embryotomy saved the mother. In one case recently the waters were broken two hours before I was called. One hand was outside, and it took slow, hard work under complete anesthesia to change the position and obtain a living child.

Third: Face presentations are not so common as the transverse, but may be much harder to correct, because less often discovered early. If discovered before the head has engaged in the pelvis, it can easily be changed to a vertex presentation; but if the waters are gone and the head far down, a face presentation is very difficult. Combined internal and external manipulation will effect a change in some cases, and some cases will not stay changed, but will recur unless held down by external pressure. These should be extracted at once by instruments. These children will usually hold the head back abnormally for a few days. I saw two cases of face presentation last year neither of which were especially hard to correct.

Fourth: Perhaps one of the commonest causes of slow or delayed labor, and one making the woman suffer for days often and sometimes two or three weeks, is the displacement of the os uteri upward and backward. This allows the descending head to be caught in a kind of pocket by the distention of the anterior lip of the cervix. There is little or no opening of the os until labor is far advanced after prolonged suffering. This tedious delay and needless pain may usually be avoided, if the physician will take the time to hold the cervix forward for one or two hours, and meanwhile assisting the dilatation as the pains occur. One can often get a history, in multipara, of former labors lasting several days, and such a woman promptly delivered is a perennial advertiser for her doctor. Several of these cases came under my care last year. It is a tiresome job holding the cervix forward, yet, it saves hours of pain for the patient and hours of time for the physician.

Fifth: Missed labor is not a fiction. Four times within a year have I found labor occurring at ten months. This was proved by the history, by the date of last period, by the date of quickening, and especially by the development of the child, as the closure of the fontanelle, the very long hair and nails, and the weight of the child. These cases are nearly always forceps cases, and often very hard ones.

Two cases with this difficulty I saw about a year ago, both women were multiparae, foreign born, with large roomy pelves. Both were delivered by forceps under chloroform with no spe-

*Read before McLean County Medical Society, June, 1914.

cial trouble. The babies both had rigid skulls and looked like month-old babies. They weighed 11½ and 12 lbs.

Another case of missed labor occurred in a small primipara, and was very difficult. The mother suffered no apparent injury, and was up in the usual time, but the compression was so great that the child never breathed. There was no trace of the fontanelle; weight, 13 pounds.

All of these had some signs of labor at about the ninth month, but not enough for them to call me.

One other case of missed labor is worthy of special notice, and gave a very unusual history. The patient's mother had seven pregnancies. All seven were delivered by forceps. All babies were very large—some were dead before birth, and only one lived. She is a very large woman; height 5 ft. 10 in.; weight, 230 lbs. There is no doubt in my mind that she went ten months. In a former pregnancy she had been delivered by instruments of a dead baby. Labor came on one week after last motion was felt, when the fetus had probably died. The pains were very hard and dilatation was prompt and good. The head came rapidly down to the vulva, where it stopped, notwithstanding exceedingly hard pains. Then under chloroform the head was delivered by forceps. It was enormous. The skin was peeling, which showed the fetus was dead for days. The shoulders were too large to come out, although the pelvis and vagina were unusually large. The head and both arms and shoulders were successively removed with the hook. Even then, with the chest empty and collapsed and the hook fastened under the ribs, it took the hardest kind of work to deliver the abdomen and hips. The pieces were gathered up and weighed 16 pounds. I have delivered several hundred women, but I never saw any child anything like so large as this one. Should this patient again become pregnant, I should recommend that labor be induced at eight months.

Sixth: Another common cause of slow and hard labor is a contracted pelvis. Not many native-born American women have deformed pelves, although occasionally we find one with the underangle of the pubic bones too acute, making the outlet of the pelvis narrow. They may require a low forceps operation; but among our foreign-born women we often find a really deformed or contracted pelvis. A small child may be born without instruments if the contraction is not too great. Usually these conditions will require forceps—whether the narrowing be from front to back or from side to side. Some years ago I saw a case that was too contracted for any child to pass through, and by separating the symphysis subcutaneously, a living child was obtained. The past year I have been fortunate enough to meet only two cases of contracted pelves, neither of which required more than a common forceps operation.

Other causes occasionally delay labor, but those mentioned are the commonest ones. A short cord I have seen hold back a child until it broke and a blue baby was born.

Two or three years ago I had a case of spina bifida, in which the sack as large as the child's head arose from the back of the neck. After the head came out it was impossible to get the body until the sack was discovered and opened.

Another unusual case recently was one of eclampsia. There was so much edema that it was hard with instruments to deliver a small child. Although there were two convulsions before birth and several afterward, both mother and child survived.

These cover the ground of my experience with slow labors for the year 1913. Out of a total of 107 cases, there were 16 difficult, 8 of these required forceps; 4 children were dead before birth from unknown causes; one died from compression of skull at birth; one embryotomy on a dead child; 2 face presentations; 2 transverse; 3 breech; 2 contracted pelves; 12 with weak or insufficient pains; 6 cases with cervix too far backward. No maternal deaths, and no case of puerperal fever.

The Red Cross Seal on your Christmas package sent by mail should bring an added thrill of pleasure to the recipient of your Christmas cheer.

Do not forget to visit the Public Health Exhibit at the City Club, 315 Plymouth court, open from December 1 to January 16. It is an exhibit well worth visiting.

Visitors should ask for and procure the handbook, before starting in to study the various exhibits. Readers of this Journal may obtain copies by postal request to the secretary of the Department of Health, Room 710, City Hall.

ILLINOIS MEDICAL JOURNAL

Published monthly by The Illinois State Medical Society, under the direction of the Publication Committee of the Council.

GENERAL OFFICERS 1914-15

PRESIDENT.....ALBERT L. BRITTIN, Athens
PRESIDENT-ELECT.....CHARLES W. LILLIE, E. St. Louis
FIRST VICE-PRESIDENT.....OTTO T. FREER, Chicago
SECOND VICE-PRESIDENT.....EVERETT J. BROWN, Decatur
TREASURER.....A. J. MARKLEY, Belvidere
SECRETARY.....W. H. GILMORE, Mt. Vernon
(Ex-officio Clerk of the Council)

THE COUNCIL

District 1—EMIL WINDMUELLER, Woodstock.
District 2—EDWIN S. GILLESPIE, Wenona.
District 3—CLYDE D. PENCE, Chicago.
District 4—AUGUST H. ARP, Moline.
District 5—C. S. NELSON, Springfield.
District 6—C. D. CENTER, Quincy.
District 7—C. F. BURKHARDT, Effingham.
District 8—E. B. COOLEY, Danville.
District 9—FRANK C. SIBLEY, Carml.

CLYDE D. PENCE, *Chairman*, 3338 Ogden Avenue.

Send original articles and all communications relating to advertisements and mailing list to Dr. Clyde D. Pence, Editor, 3338 Ogden Avenue.

Membership correspondence to Dr. W. H. Gilmore, Mt. Vernon, Ill.

Society proceedings and news items to Dr. Henry G. Ohls, *Managing Editor*, 927 Lawrence Avenue, Chicago.

JANUARY, 1915.

Editorials

SECTION ON PUBLIC HEALTH AND HYGIENE.

About two years ago there was organized in the Illinois State Medical Society a new section on Public Health and Hygiene for the purpose of studying the broader subjects pertaining to the health of the community. And on account of its being so closely associated with preventive medicine on the one hand and the greater subject of public hygiene on the other, this section is destined to become a most powerful influence for good in the state society within the next few years. It is entirely unnecessary to enter into the details of the broad field which this section will cover in its papers and investigations, but to enumerate a few of the more important subjects will assist the members in gaining a closer understanding of the broad plans which are being laid for this great public body, and to enlist the interest and support of every member of the state society in so noteworthy an undertaking. And since this program will be given on so important a day of the state meeting as Wednesday, May 19, 1915, and at an hour when the sections on medicine and surgery will be in full swing, this section is entering directly into competition with these older sections for the attendance of all those who are vitally interested, not merely in the curing of disease, the alleviation of pain or the amputation of a member of the human anatomy, but in a far more important series of subjects appertaining to the welfare of the community: Public Health and Hygiene; Preventive Medicine, if you please; Vital Statistics; Water and Milk Supplies of cities and towns and the diseases which often follow in their wake; the Disposal of City Wastes, which includes both garbage and sewage and numerous other public questions.

The contributors to this program will include men of the very highest standing in their particular fields of work, while such institutions as the University of Illinois, the Illinois State Board of Health, the Chicago Medical Society Milk Commission and several other well-known institutions will be represented by men who have gained their spurs by merit. And who can afford to miss such an array of public health questions as will be prepared for discussion at this meeting? Every county society in the state should have at least one representative present at this meeting, while every city and town in the state should send a representative to hear these important papers and to enter into the discussion of so vital a subject as public health.

All those interested in this great subject should keep this meeting in mind, watching our columns for further important announcements.

OSTEOPATHIC PRACTICE.

Dr. W. C. Swartz, osteopath, will be absent from the city Monday, December 14, to Monday, December 31, taking post-graduate work in the Chicago college of osteopathy. The work Mr. Swartz will do there will be under the directions of the most famous men in the osteopathic profession, who will discuss the underlying principles of the relief of catarrh and deafness. These instructors are the men who have made the hitherto unknown record of relieving deafness. In hundreds of cases treated these men have made the wonderful record of relieving 75 per cent of the cases treated. These men are coming to Chicago to give the results of their skill and research to the osteopathic profession. Always ambitious for the very best for his patients, Dr. Swartz will be on the ground and will get and bring back

to Danville the very best to be had in his line.—*Danville Press.*

We congratulate the gentleman upon the vast knowledge he will attain in the two weeks' course, and also in being associated with such distinguished record-breakers. Truly, to be able to cure 75 per cent of deaf patients is no mean accomplishment and if the gentleman can but convince the good people of Danville of such powers, what a lot of second-hand ear trumpets will be for sale or for gratuitious distribution through the medium of the "Helping Hand" columns of the daily press.

Aside from the advertising ability displayed by the above—and we must say that the osteopaths are masters of the advertising art—there is another question brought to mind. Before every legislature for several years there have been presented many osteopathic bills, and among them is usually one asking for a special examining board for osteopaths and other cults, each claiming they do not practice medicine nor surgery, and begging the privilege of some other than the regular way of obtaining a license to practice osteopathy, chiropractics, naprapathy, or other similar practices, whatever they may be. When these irregular practitioners are given a license, they immediately forget they did not want to practice medicine nor surgery.

We presume the same grist of such bills will again be presented to the legislature soon to be called, and the medical profession of Illinois must be alert. There must be maintained but one entrance to the practice of medicine by any method in Illinois. When an applicant has fitted himself so that he is able to pass the required examinations as given by the state, then should he be protected from others gaining entrance by some short route. We hope soon to see all matters pertaining to public health questions under the control and supervision of one board.

MR. HANSEN'S PAPER.

At the annual meeting held in Decatur last May, Mr. Paul Hansen, engineer of state water survey, read a paper before the public health section, relative to an epidemic of typhoid fever in Rockford.

Quite a large part of this very interesting paper consisted of charts and a map, which, to re-produce, would require considerable space—rather more than the JOURNAL could give it.

The paper has been published in full in pamphlet form, and any one wishing a copy, may obtain it by writing to Mr. Hansen, Engineer of State Water Survey, Urbana, Illinois.

We regret that it was impracticable for the JOURNAL to publish this paper, and hope that our members wishing the paper will apply to Mr. Hansen for a copy.

ACTIONS FOR CIVIL MALPRACTICE.

Fifth Article.

ROBERT J. FOLONIE, LL. B.,
CHICAGO, ILL.

Claims of the kind under consideration are sometimes honest in their origin, from the viewpoint of the patient. It will not do to say that every claim for malpractice is from the beginning an attempt to blackmail, although even in honestly asserted cases there is a tendency to exaggerate—sometimes intentionally and sometimes an unconscious outgrowth of brooding over fancied grievances.

It must be borne in mind that etiological problems, sometimes difficult for the physician, are entirely beyond the understanding of the layman, who most often has no knowledge of even the term "etiology," much more its varying ramifications.

A case which I believe was originally brought with an honest belief that it was entirely justified, was the case of Drs. P. and M. The former was called in attendance upon the case of a beautiful little girl afflicted with diphtheria. He called in the second physician to assist. This was in the early days of antitoxin treatment and at a time when its use was much more uncommon than at present. An injection in proper amount was made into the thigh and a prompt cure of the diphtheria resulted. After the cure was virtually complete, a dry gangrene resulted in the same leg into which the injection had been made, and amputation above the knee was performed by another surgeon.

The coincident facts of the loss of the leg into which the needle has been inserted, created an immediate assumption of a causal relation. No other hypothesis was considered.

A lawyer was employed who adopted the same

hypothesis and he found physicians who would support the hypothesis, dependent, however, upon premises as to which the lawyer was presumably not informed. Before this stage of the case was reached, a suit had been pending for some years. The physicians consulted placed in the hypothesis upon which they must act, intervening sepsis, and a condition of sepsis was recalled.

Further probing into details as to the causes of sepsis, recalled to mind points not previously brought out, i. e., that the bare point of the needle was felt with bare and unwashed fingers, that the needle was laid upon a dirty table before being used and similar details not theretofore in the case.

The existence of such facts was entirely denied by the attending physicians and the jury found with the physicians that they had not so misconducted themselves.

It may be imagined what difficulty would exist in visualizing to a jury a case of diphtheritic thrombosis, and the ease with which a description could be made of a dirty table and dirty fingers, with both of which the jury are presumably acquainted.

It is to be borne in mind in such cases that the patient and the jury know nothing whatever of emboli or thrombi, and while it is always well to take the patient into confidence, no explanation in such a case will be accepted, but it will be looked upon as an effort to blind them to the real facts. When such a situation arises there is no recourse for the physician, except to place himself in competent hands and steel himself for a lawsuit.

BIG EXCURSION TO CALIFORNIA.

Chicago Medical Society Planning Trip to Panama-Pacific International Exposition—Members to Attend Exposition and Convention in a Body.

Arrangements are under way by the Chicago Medical Society for a big personally conducted tour to the Panama-Pacific International Exposition and the convention, to be held in San Francisco week of June 21, 1915.

An all expense trip arranged by the Gregory Tours Company, who have been officially appointed "Tour Agents" for the Panama-Pacific International Exposition, includes first class railroad ticket between Chicago and San Francisco and return, Pullman standard sleeper to San Francisco and return, transfer of member and checked baggage to and from hotel in San Francisco, seven consecutive days at the Hotel Plaza in San Francisco, including breakfast, seven admissions to the Panama-Pacific International Exposition and twenty admissions to attractions within the exposition grounds.

Each ticket includes side trip to Los Angeles and San Diego and return. The cost as outlined will be $154.00.

t A special train will be furnished for 125 members or more. The train schedules will be arranged so that the scenic delights of Colorado will be viewed by daylight. There will also be a daylight ride through the Sierras to San Francisco, giving views of the greatest scenery in America.

This trip will be personally conducted by a competent director furnished by the Gregory Tours. It will not only be a pleasure and business trip, but an educational one, and every effort should be made by the members of the association to make it a complete success.

Following you will find a reservation blank. Please fill this out and accompany it with your check for $10.00 to secure your hotel reservation in San Francisco. Executive Council.

Please reserve accommodations for ..... persons on our Chicago medical special train to San Francisco.

I enclose herewith check for $....., being a deposit of $10.00 each on reservations.

Signed.....
Address.....
City.....
(Chicago Medical Society Special.)
Date.....

Make all checks payable to the Gregory Tours, 1104 Lytton building, Jackson boulevard and State street, Chicago. For further information telephone Wabash 5157. Do it now.

Your reservation may be transferred any time prior to ten days before leaving Chicago.

TUBERCULOSIS NOTES.

Beifeld reports that the whispering voice will often bring out the significant rales of apical tuberculosis when other methods fail.

Beranek's tuberculin is strongly recommended by Fleming (Edinburgh Medical Journal), causing rapid fall in temperature and improvement of general condition of patient.

The use of the carbon arclight as a method of artificial heliotherapy in the treatment of lupus and of bone and joint tuberculosis, has achieved remarkable results in the hands of Reyn and Ernst (Hospitalsteube, Oct. 21).

A positive Von Pirquet reaction does not always mean an active tuberculosis, nor does a

negative reaction eliminate tuberculosis. This test requires a great deal of fine discrimination and must be understood perfectly in order to interpret results obtained correctly.

Atropine sulphate gr. 1/33 to gr. 1/25 is a sovereign remedy in pulmonary hemorrhage.

The nitrites, producing pulmonary vaso-constriction and at the same time peripheral and splanchnic vaso-dilatation, meets the requirements of an ideal remedy in pulmonary hemorrhage.

Knopf recommends for the cough of tuberculosis, before resorting to internal remedies, the inhalation of the following.

Eucalyptus oil, 3 parts,
Spirit of chloroform, 2 parts,
Menthol, 1 part,

15 to 25 drops in inhaler or on handkerchief and inhaled several times daily.

In constant recurring hemorrhage, where no tendency to blood clotting, inject 15 to 25 c.c. of horse serum for two or three consecutive days. Artificial pneumothorax will give quicker and probably better results.

For that most distressing cough and pain of laryngeal tuberculosis E. D. Davis recommends the deep injection around nerves of that region of eucaine, 2 grains in 80 per cent alcohol. Be careful not to puncture blood vessels in this region.

Baldwin of Saranac Lake says of tuberculin: "First, it may work much good in some patients in lessening the sensitiveness to itself. Second, it may act as a stimulant to healing, or third, it may aggravate the disease.

The presence of albumin in the sputum is a valuable sign in the diagnosis of pulmonary tuberculosis. F. J. F.

CLINICAL CONGRESS FOR THE STUDY OF LOCAL SPINAL AND SCOPOLAMIN-MORPHINE ANAESTHESIA.

January 26, 27, 28, 1915.

Evening meetings to be held with the Chicago Medical Society, at 8:15, Marshall Field & Co. Annex Building, 25 East Washington St., sixth floor, telephone Central 8455.

Clinics to be held at Cook County Hospital, Policlinic Hospital, Post Graduate Hospital, Presbyterian Hospital, Illinois Medical School, Alexian Brothers Hospital, and Mary Thompson Hospital.

Program.

January 26—8:15 P. M.

1—Spinal Anaesthesia in General Surgery. W. Wayne Babcock, Philadelphia.

2—Spinal Anaesthesia as Used in South America. Professor De Bayle, University of Nicaragua.

3—Spinal Anaesthesia in Gynecology. H. J. Boldt, New York City.

4—Sacral Anaesthesia (extradural injection of novocain as used in Freiburg Frauen Clinic). Kurt E. Schloessink, Freiburg, Germany.

Discussion: Arthur Dean Bevan, John B. Murphy, B. C. Corbus, Lester E. Frankenthal.

Program.

January 27—8:15 P. M.

1—Caesarean Section Under Local Anaesthesia. J. Clarence Webster.

2—Scopolamin-Morphine in Abnormal Obstetrics. John Osborn Polak, Brooklyn, N. Y.

3—Scopolamin-Narcophine Anaesthesia as Used in the Freiburg Frauen Clinic. Kurt E. Schloessink, Freiburg, Germany.

4—A Psychological Study of "Twilight Sleep" by Means of the Giessen Methods. Elizabeth Ross Shaw.

Discussion: J. B. DeLee, Henry F. Lewis, Chas. S. Bacon, Chas. E. Paddock.

Program.

January 28—8:15 P. M.

1—Scopolamin-Morphine Anaesthesia. M. G. Seelig, St. Louis, Mo.

2—Scopolamin-Morphine Anaesthesia in Abdominal Surgery. Emil Ries.

3—Local Anaesthesia in Thyroid Surgery. A. E. Hertzler, Kansas City, Mo.

4—Local Anaesthesia in General Surgery. M. L. Harris.

Discussion: Clifford U. Collins, Peoria, Illinois; Paul F. Morf.

Demonstrations of "Twilight Sleep" will be given by John Osborn Polak, Kurt E. Schloessink, and Bertha Van Hooser. Time and place to be learned at the office of the Chicago Medical Society.

Bertha Van Hoosen, Chairman.

STATE BOARD EXAMINATIONS

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the following results of examination held by the Illinois State Board of Health, in Chicago, October 6-8, 1914. The total number of candidates examined was 118, of whom 103 passed, 9 failed and 6 did not complete the examination.

PASSED.

College—	Year Grad.	Total No. Passed.
American, St. Louis	(1912, 1) (1914, 1)	2
Barnes	(1899)	1
Bennett	(1912, 1) (1913, 3) (1913, 2) (1914, 6) (1914, 11)	23
Chicago Coll. M. & S.	(1909, 1) (1910, 1) (1911, 2) (1912, 1) (1913, 3) (1914, 16) (1914, 12)	36
Hahnemann, Chicago	(1912, 1) (1913, 1) (1914, 1)	3
Hering	(1913)	1
Jenner	(1914)	3
Louisville & Nashville	(1908)	1
Meharry	(1914)	3
National University of Greece	(1909	1
Northwestern	(1914, 4) (1914, 2)	6
Reliance	(1911)	1
Rush	(1913, 1) (1913, 1) (1914, 5)	7
University of Illinois	(1913, 1) (1914, 4) (1914, 6)	11
University of Bellevue, N. Y.	(1914)	1
University of Pennsylvania	(1914)	1
Western University, London	(1909)	1
Woman's Penn	(1906)	1

FAILED.

Bennett	(1914)	1
Chicago Coll. M. & S.	(1914)	1
College of Medicine & Surgery, Chicago	(1909)	1
Detroit Medical Coll.	(1910)	1
Illinois Medical College	(1910)	1
Jenner	(1914)	1
P. & S., Chicago	(1901)	1
Royal Univ. of Palermo	(1911)	1
Univ. of Zurich	(1911)	1

STILL THE WINNER TO DATE

A Happy New Year.

—Courtesy of Mr. Bradley and The Daily News.

Auto Sparks and Kicks

DENATURED ALCOHOL FOR PRIMING MOTORS.

Engineer Says It Is Better Than Gasoline for Priming.

Denatured alcohol is the best primer for motors, according to Ralph Nesmith, formerly chief engineer of the La France Fire Engine company, regarded as one of the leading authorities on building and maintaining motors.

"As motorists know," declares Nesmith, "the gradual lowering of the quality of commercial gasoline available for automobiles has made it difficult to start the motor, especially in cold weather. Under existing conditions, I find that denatured alcohol is preferable to gasoline for priming purposes, because a few drops injected through the priming cock will insure a quicker start. I also find the engine will run longer on alcohol and thus give the carburetor longer in which to begin its work.

"Experiments with ether for this purpose show that while the engine works quickly enough, it does not give the carburetor a chance and a second priming usually is necessary. As denatured alcohol is cheaper than ether and always is uniform, it is certain to become a popular primer.

PROPER WAY TO TURN ON NARROW STREETS.

Even in such matters as turning a long wheelbase car on a narrow street there is a right way and a wrong way to go about it, though not many persons know the right way, or at least the way that takes the shortest time and causes the least wear and tear on the car. The general practice of first going ahead in a curve until the front wheels bring up against the curb requires that the low speed be engaged, then the reverse speed, to back up in a reverse curve, and then the low speed for going ahead again. But if the car is first backed in a curve to the far curb, it will be necessary to engage the low gear only once.

TO AVOID BREAKING AN ARM.

Many a broken arm and worse would have happened had not the following advice of George A. Hows, the founder of the famous Panhard oil business, been followed: When cranking, place the thumb against the index finger and take the handle between the four fingers and the palm of the hand. The hand thus opens readily should a back-kick occur. Always crank up; never down.—*Motor Print.*

SPARK PLUGS.

When a spark plug fouls and missing of explosions is the result, the current skips across through the grease and carbon that covers the porcelain. The points seldom require any attention, but the porcelain should be removed and cleaned with gasoline on a soft cloth. The "petticoat" spark plug has the longest distance for this escaping current to travel, and will stand more dirt and grease without missing.

WHY WE SAY "SHE."

We refer to an automobile by the female pronoun because she is very much like a woman in many respects. When she is slicked up, and is attractive, we all admire her; when she is silent we are pleased with true astonishment, for few are silent; when she acts properly she is charming, yet we often drive her into improper actions by lack of care; when she gets old and has lost her style we try to discard her and hunt up a more pleasing one—an affinity.

INNER TUBE WRINKLES.

When you immerse an inner tube in water to discover a leak, make a mark around the leaking place with an indelible pencil.

A bag made of soft flannel is best to keep inner tubes in. Tie the mouth of the bag around the projecting stem.

It is false economy to buy cheap inner tubes. A poor inner tube will quickly put an expensive casing in the scrap pile.

In repairing a fair-sized hole it is better to place a patch on both sides and then vulcanize.

If you have no gasoline or sand paper to clean the surface for a patch, use rubber cement on a small piece of clean cloth.

THIS PAGE RESERVED

FOR

PERMANENT STATE MEETING
ANNOUNCEMENTS

THE

COMMITTEE ON ARRANGEMENTS
FOR THE NEXT MEETING OF THE

ILLINOIS STATE MEDICAL SOCIETY

TO BE HELD AT

SPRINGFIELD

ON

MAY 18, 19 and 20, 1915

EARNESTLY REQUESTS YOU TO DECIDE
RIGHT AWAY

TO ATTEND

The Largest, Best, Busiest and Most Enthusiastic
Session in the History of the Society.

Special "Doings" for the Ladies on Wednesday,
May 19—ALL DAY.

Watch This Space Next Month for Announcements.

Society Proceedings

ADAMS COUNTY.

The Adams County Medical Society held its annual meeting on Monday, December 14, at Hotel Quincy. About thirty-seven doctors were in attendance.

The morning session was devoted to the reading of business correspondence, listening to the reports of the secretary and treasurer for the past year and the election of officers.

The following physicians will constitute the official roster for the year 1915: President, Dr. C. R. Bates, Camp Point; first vice-president, Dr. G. E. Whitlock, Columbus; second vice-president, Dr. D. G. Stine, Quincy; secretary, Dr. Elizabeth B. Ball, Quincy; treasurer, Dr. C. E. Ericson, Quincy; censors, Drs. J. H. Blomer, W. F. Pearce and D. M. Knapp; defense committee, Dr. John A. Koch, Quincy; delegates to state meeting in 1915-1916, Dr. H. P. Beirne, Quincy; alternate delegate, Dr. John A. Koch, Quincy; library committee and trustees, one new member elected, Dr. C. A. Wells, Quincy.

Luncheon was enjoyed in the dining room of the hotel. In the afternoon Dr. John A. Koch presented an interesting and instructive paper on "Spinal Anesthesia." The paper contained a number of very good points which were brought out during the discussion.

There being no further business the meeting adjourned.

ELIZABETH B. BALL, Secretary.

ALEXANDER COUNTY.

The annual meeting of the Alexander County Medical Society was held in the Chamber of Commerce rooms in Cairo, December 17. Fifteen out of the twenty-three members were present. The secretary-treasurer's annual report showed the following facts about the condition of the society and the medical profession in this county: Number of physicians in the county, 32; number eligible to membership, 31; number belonging, 23; number belonging last year, 24; lost during the year, 2; gained during the year, 1; net loss, 1; number of meetings held in year, 9; average attendance, 9⅓; Fellows of A. M. A. in the county, 8. Total receipts for year, $95.00; expenditures, $80.70; cash on hand, $14.30.

The following officers were elected for 1915: President, Dr. G. H. McNemer, Cairo; vice-president, Dr. W. F. Grinstead, Cairo; secretary-treasurer, Dr. Flint Bondurant, Cairo; member board of censors, Dr. O. M. Dickerson, Miller City; delegate to state society, Dr. J. W. Dunn, Cairo; alternate, the secretary.

After a discussion of various matters of interest to the society and the profession in general the members repaired to the Alexander Club grill room where a banquet was served and the following program carried out:

TOASTS.

(Dr. Dodds, Toastmaster.)

1. "The Medicine Man".....Dr. Dodds
   Dr. Davis, Story (pathetic or otherwise).
2. "Nature's Plan".....Dr. McNemer
   Dr. McManus, Story (or Song).
3. "Why a Medical Organization".....Dr. Gassaway
   Dr. Bondurant, Story (serious or otherwise).
4. "Why I Am Always Present".....Dr. Grinstead
   Dr. Cary, Good-night Story.

It was the consensus of opinion that the evening was the most pleasant and profitable the members ever spent together.

JAS. W. DUNN, Secretary.

CLARK COUNTY.

Society met in Court House, Marshall, Ill., at 2 p. m., December 10, 1914.

Members present: McCullough, Johnson, S. C. Bradley, R. H. Bradley, L. J. Weir, Prewett, Marlow, Haslitt, Pearce, Mitchell, Burnside, S. W. Weir.

Visitor: Dr. G. B. Thomas of Hazel Dell.

Some communications were read and considered.

Marlow reported a case of neuritis of side of face and arm on same side. Lessened strength in that arm, pain and tenderness; afflicted 1 or 2 years. Medicine does not seem to relieve. Many suggestions were made in the discussion.

Johnson reported a case of knee effusion for two years, which was tapped and five ounces of serous fluid obtained. It refilled in a short time. Quite a discussion and exchange of experiences, observations and opinions followed.

Dr. S. C. Bradley presented the subject of the meeting, "Malignant Tumors," in a well prepared paper, considering symptoms, palor, sallow skin, early attributed to digestive troubles which are usually present. Advised removal of all lumps in the breasts of women and other suspicious tumors. Better to excise some benign tumors than wait too long. Described cases illustrating his points, especially the delay patients made in the past of fooling away valuable time with pastes till too late for successful operations and cases that are not diagnosed till the disease has extended too far to be entirely removed.

Dr. P. P. Haslitt led the discussion and several members participated, continuing the interesting and valuable talks until a late hour.

L. J. WEIR, Secretary.

COOK COUNTY

CHICAGO MEDICAL SOCIETY

Regular Meeting, December 2.

Talk on Foot and Mouth Disease, Dr. Joseph Hughes, President Chicago Veterinary College.

Live Stock Sanitary Control; Texas Fever, Bovine Tuberculosis, Hog Cholera. Dr. O. E. Dyson, State Veterinarian.

The Spread of Disease Through Garbage. Prof. V. A. Moore, Cornell University, Ithaca, N. Y.

Subject not announced. Dr. S. E. Bennett, United States Inspector.

Regular Meeting, December 9.

1. An Obstetrical Outfit and Its Use in Twilight Sleep Delivery at the Mary Thompson Hospital. Bertha Van Hoosen.

2. Goitre. A. A. O'Neill. Discussion, Wm. O. Krohn.

3. Resection of the Posterior Roots of the Spinal Cord for the Cure of Little's Disease. M. E. Blahd, Cleveland, Ohio. Discussion. Carl Beck.

Regular Meeting, December 16.

1. Some Types of Malignant Endocarditis. Jos. M. Patton. Discussion. J. Weatherson.

2. Psychotherapy in General Practice. Wm. S. Sadler. Discussion. Wm. G. Stearns.

3. The Etiology, Pathology and Treatment of Sexual Impotency. Irvin S. Koll.

ENGLEWOOD BRANCH.

The December meeting of the Englewood branch was held on Tuesday evening, December 1, at the Englewood Hospital. President Dr. Joseph Sherlaw presided and the following program was presented:

"Demonstration of Specimens Illustrating Various Localizations of Streptococci Following Intravenous Injection," by Edward C. Rosenow.

For over two hours those present enjoyed an extremely rare treat, in fact it was as listening to a beautiful fairy tale and one can but think of Rosenow as "The Wizard of Experimental Medicine," especially so in relation to his work on streptococci. These organisms in his hands behaved almost as trained animals, doing first one thing and then another.

He spoke of various localizations, the factors determining same and gave many experimental facts to show that they do localize. For instance, by injecting mixtures of hemolytic streptococci and streptococci viridans an arthritis and endocarditis was produced in the same animal, the arthritis was proven to be due to the hemolytic streptococci and the endocarditis to the streptococci viridans. It was during his work on the transmution of pneumococci and streptococci that Rosenow found that oxygen pressure played an important role in the virulence of different strains of streptococci organisms, in fact his experiments showed that the kind of infection and localization depended almost entirely upon the degree of virulence. He devised a technique in which he obtained, not only aerobic and anaerobic conditions, but all degrees of oxygen pressure between these two points. This was done by means of a tall column of melted and cooled ascites-dextrose-agar, the one end being aerobic and the other anaerobic, the middle point giving the best results.

He showed that streptococci of a certain degree of virulence would produce appendicitis and when reinjected into animals would again produce the same lesion. In summing up his work in this connection he stated that germs of the first degree of virulence would produce appendicitis, of the second degree ulcer of the stomach was the rule, of the third degree cholecystitis resulted and that if the virulence was still raised a pancreatitis resulted. He showed many specimens demonstrating the above results and stated that the germs did not pass from one form to another, but that it was rather the degree of virulence that determined the character of the injection and the lesion produced.

He gave the history of a girl with acute appendicitis who was operated on at 48 hours. Twenty-four hours after operation Rosenow examined the tonsils and pressed out some pus. This was cultured and streptococci found. Injections were made into animals with the result that all developed appendicitis. Four days later pus from the tonsil was again cultured and injected. Not one developed appendicitis, but some arthritis and some endocarditis. This was explained by the germs gaining a different degree of virulence, the tonsils being a good place for this on account of variations in degrees of oxygen pressure.

In speaking of the high degree of virulence of the germ producing localizations in the gall bladder he gave the history of a case. He cultured the bile and the tissues and from the center of the stone a pure culture of streptococci was isolated. This was injected into a dog and produced a cholecystitis with enormous gall bladder.

He briefly recited the work he did at Mayo's clinic in culturing the bile and tissues in gall bladder cases. In this connection he showed the absolute uselessness and error in culturing the contents of the gall bladder or a pus appendix. Any old germ may be found at this stage and the primary and all important organism is overlooked. In culturing the wall of the gall bladder and the center of the stone streptococci were most commonly found, while in the bile the colon, typhoid and other germs were present. These Rosenow believes, and gives good reasons for his belief, are secondary. In cases of acute appendicitis operated on very early pure cultures of streptococci were found, the rule being that the farther from the lumen—the mucosa—and the nearer the peritoneal coat the culture is taken the more likely are streptococci found; the important point being the demonstrated fact that the true bacteriology lies not in the findings of the contents of an appendix or gall bladder, the primary infection having passed beyond and should be sought in cultures taken from the tissues.

He spoke of the formation of gall stones, the foreign body consisting of bacteria and leucocytes; all the rest being simple—it all being a question of infection.

After closing his brilliant discourse Dr. Rosenow answered numerous questions put to him by some of the members present. In all some forty or fifty specimens were shown.

A rising vote of thanks was extended to Dr. Rosenow. The attendance was 94.

ARTHUR G. BOSLER, Secretary.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY AND CHICAGO SURGICAL SOCIETY.

Joint Meeting Held May 1, 1914.

The President of the Chicago Laryngological and Otological Society, Dr. Otto J. Stein, in the chair.

EXHIBITION OF SPECIMEN BY DR. SHAMBAUGH.

This specimen was one in which the ventricle of the larynx had been split open and the appendix could be seen running up half way to the top of the thyroid cartilage. The appendix of the ventricle varies, not only in different individuals, but on the two sides. It is always present. It may exist as a slight pitting or depression; at other times as a prolongation, that extends up not only as high as the top of the thyroid, fully an inch, but also up to the hyoid and base of the tongue, in some instances. The function seems to be to assist in supplying lubricant to the vocal cords. Under the term laryngocele ventricularis, Virchow described a condition which he found post-mortem of elongation of the ventricle, considered by him to be a pathological condition, running up as high as the upper border of the thyroid cartilage, or, in rare cases, as far as the hyoid bone. Anatomists today believe this condition represents simply an anatomical variation of a normal appendix of the ventricle.

The term laryngocele ventricularis seems a suitable one for the condition the speaker was discussing, where there exists a cystic dilatation of the appendix of the ventricle. This cystic dilatation is a very unusual condition. Hippel, in 1910, made a complete review of the subject, and collected, in all, twenty cases throughout the entire literature which he was able to vertify as cystic dilatation of the ventricle of the larynx. Eight of these were discovered post-mortem, so that there were only twelve cases that had been observed during life and recognized.

These cystic dilatations of the appendix of the ventricle form in three different ways; sometimes there is simply a dilatation within the larynx, with laryngeal symptoms; at other times the cystic dilatation does not take place in the larynx at all, but the point of the appendix is pushed through the thyro-hyoid membrane, forming an external dilatation, so that the only symptom is from the external swelling in the neck. In other cases, like the one he wished to report, there is a double condition, cystic dilatation external in the neck, and also dilatation in the larynx.

The causes leading to this condition are recognized as two: One, the existence of one of these elongated appendices. The elongated appendix of the ventricle is supposed to be necessary before the patient may develop a cystic enlargement. As the active cause, spells of coughing are thought to play a rôle. In the case reported by the speaker a violent fit of coughing apparently started the process. Blowing on a wind instrument has been responsible for a number of cases. In one case it seemed that the cystic enlargement of the ventricle was brought about by politzeration of the middle ear.

Regarding the symptoms produced, they vary as to whether there is external or internal enlargement or a combination of the two. When external, it is very characteristic, located directly above the thyroid cartilage. It may be quite an enlargement. The enlargement in the neck is a very characteristic condition. It is hardly to be mistaken. It can be reduced by pressure, but this only lasts for a short time and then it enlarges again. The first symptom is usually pain around the region involved. When there is enlargement in the larynx, one gets just the symptoms you would expect—loss of voice because one vocal cord is covered over by this enlargement, which stops its action, just as any growth in this region would do. If the swelling in the larynx gets large enough, it may produce symptoms of difficult respiration. The patient whose case was here reported had such symptoms at one time.

One of the most annoying features of this condition is the infection that sooner or later often gets into this cystic enlargement. During some acute infection in the throat this pouch becomes infected, and then it remains chronically infected, secreting large quantities of pus. In the case reported the constant secretion of foul pus into the throat, not only during the daytime, but also during the night, has been her chief annoyance. During childhood this patient had experienced a good many attacks of acute laryngitis, with symptoms of hoarseness and coughing, which would be associated with sore throat, lasting several weeks, and then disappearing. She had a great many such attacks, but they were of short duration. Then she had been practically free from symptoms for twenty years, that is, until four years ago this spring, when she was traveling abroad and had one such attack, apparently the same as those of early life. During a violent spell of coughing she felt a filling up of the neck, developed hoarseness of a marked degree, some pain in the side of the neck. This cystic enlargement never entirely disappeared, although at times it would collapse, and for a short time the voice would be restored. The loss of the voice was, of course, a hardship, but the pus was worse. It was not only annoying in the daytime, but it was still more troublesome at night, when she often was required to sit up most of the night in bed. The pus would fall into the larynx and she had to cough it up constantly.

The year after this cystic enlargement developed she was in Chicago and saw a number of men, and several attempts were made to relieve it. One man operated twice on the larynx itself, attempting to give her relief. Of course, this relief was only temporary. On opening the cyst, it would collapse like a punctured balloon, but it would soon fill up again. She consulted a number of general surgeons, and one external operation was made, leaving a scar in the neck. In looking over the case, it was quite apparent that any effort to operate in the larynx itself would probably only give a very temporary relief, be-

cause there was a big pouch in the neck which would continue to pour off pus into the throat just the same.

In talking the case over with Dr. Dean Lewis, it was thought best to try, first, to get rid of this pouch in the neck, which was done, and the relief following that operation was very marked. The amount of pus secreted was very much diminished, but not entirely eliminated. She was able before this operation, by pressing on the external enlargement, to express a quarter of a cupful of pus at one time. They did not attempt to split the larynx and remove the cyst in the larynx itself, feeling that the removal of this large pouch outside might give relief enough without running the risk of producing an injury to the voice. (Dr. Shambaugh exhibited a drawing which was made of the larynx before it was operated on.) Later the speaker attempted to make a resection of the cyst in the larynx. It was quite clear that any instrument introduced from above to cut it open would cause a collapse, and he wanted if possible to split the whole cyst from top to bottom. To do this he had a special instrument made (which was exhibited), which he could introduce below the false cord into the ventricle, and then slit it up to the top. The operation was undertaken under cocaine. After the splitting of the cyst the voice returned. Then with a Krause biting forceps he bit off piece after piece in front and behind, until he had an opening about the width of his forefinger. The operation lasted fully an hour, because every time a piece was cut out it began to bleed and he had to wait until the bleeding stopped. The result of that clearing out of the larynx had not been as satisfactory as he had hoped. The size of the cyst now is perhaps half or one-third what it was before the first operation. The remaining pouch has healed over so that there is just a little fistulous opening, which distends somewhat with pus. But the scar tissue has reduced the size a great deal. There is very little trouble now with the pus running into the throat at night, although it has been more during the last few days. A couple of weeks ago she had an acute sore throat, accompanied by a flare-up in the throat symptoms, with chill and some fever.

DISCUSSION.

Dr. Dean D. Lewis said that Larrey apparently was one of the first to report a laryngeal diverticulum. During the Egyptian campaign he found that several of the people who shouted the verses of the Koran from the minarets had peculiar elastic tumors in the neck at the side of the larynx. It is doubtful whether all these cases were diverticula. Some undoubtedly were vascular strumas. There was, however, a marked interference with the voice, for in many cases the people became so hoarse that they could no longer shout the verses and they were then assigned the duty of tending the fish ponds in the temples.

After the army returned to France, Larrey noted two cases of laryngeal diverticula in the under officers of the guard.

The extralaryngeal diverticulum appears at the lower and posterior part of the submaxillary triangle. It passes through the thyrohyoid membrane over the upper border of the thyroid cartilage to reach this position. Some cases have been reported where the pouch appeared below, passing through the circothyroid membrane, but it is doubtful whether these are instances of true diverticula.

The diagnosis is not difficult, but the operative treatment offers many problems. The true extralaryngeal diverticulum can be removed easily. The intralaryngeal methods which have been employed in treating the intralaryngeal sac have not been satisfactory. Laryngo-fissure gives good exposure of an intralaryngeal sac, but the speaker believes that the best procedure is to split the thyroid cartilage just in front of the superior horn, and to expose the outer aspect of the aryteno-epiglottidean fold and the sinus. In this way the mucous lining of the diverticulum and the remainder of its wall can be removed without opening, at least to any extent, the cavity of the larynx.

Dr. Otto T. Freer said that the patient exhibited by Dr. Shambaugh and operated on by Dr. Lewis was formerly his, and he was the first one to make a diagnosis of her ailment when, what later became a pus sac, was still an air sac. He also had to encounter baffling difficulties in the treatment of this rarest of affections, difficulties which finally pointed out to him an operative method which promised success, when the patient decided to leave his care, so that he could not do what he wanted to.

At a meeting of laryngologists last winter, at which Dr. Joseph Beck, Dr. Chas. M. Robertson, Dr. Stanton Friedberg and Dr. Norval Pierce were present, Dr. Shambaugh had questioned Dr. Freer concerning his experiences with the patient, who had then come into Dr. Shambaugh's hands. Dr. Shambaugh told him that he was considering a partial laryngectomy for the relief of the condition. Dr. Freer then fully described to Dr. Shambaugh the anatomical relations of the air sac and told him that, as the patient had a perfect larynx and her difficult breathing and loss of voice were due to the mere resting of a mucous membrane sac as a damper upon one cord, even laryngotomy, not to speak of the formidable operation of removing a part of the laryngeal skeleton by hemi-laryngetomy, would, in his opinion, be the wrong procedure, especially as it would not give the desired access to the extensive diverticulum, and would spoil the patient's potentially fine voice. Dr. Freer then suggested, instead, the line of operation which he was pleased to see had been followed by Dr. Shambaugh and Dr. Lewis.

The following is the remarkable history of the patient while under his care: The patient was referred to the speaker by Dr. C. Gurnee Fellows for diagnosis, February 7, 1911. Her age then was sixty-six. She stated that she had been subject to repeated attacks of peritonsilar abscess, the last one in 1893. Her present trouble began in November, 1910, with a feeling of obstruction in the throat, and hoarseness, which did not change.

Examination: On the left side a smooth, deep-seated, elastic swelling distended the pharyngo-epiglottic and ary-epiglottic folds, extending to the thyroid cartilage externally, and so effacing the fossa piriformis. It also filled the left vallecula to the base of the tongue. It covered the left vocal cord, whose border could be seen white and normal, when the swelling was pushed away from it with the laryngeal probe. The portion of the swelling resting upon the vocal cord acted as a damper and made the voice very hoarse. Regarding the tumor as a cyst, Dr. Freer punctured it diagnostically in its posterior part with the laryngeal knife, when, to his surprise, the tumor instantly vanished and he looked into a normal larynx, the patient at once speaking in a clear, natural voice. It was evident that the sac had been filled with air and not fluid. A probe descended through the cut to a depth of two and one-quarter inches, passing downward and outward between the thyroid and cricoid cartilages. In a few days the opening had closed and the tumor had refilled with air. The speaker recognized that he had to do with a diverticulum of the ventricle of the larynx of great extent, forming with the integument a triple layer of mucosa over the left arytenoid cartilage, the left ary-epiglottic fold, pharyngo-epiglottic fold and fossa piriformis, creating in effect, when empty, an enormous mucous bursa over these parts. There was no evidence at this time of an extension of the sac outside of the thyro-hyoid membrane.

On March 13, 1911, he reopened the sac in front of the left pharyngo-epiglottic fold in the vallecula, his intention

being to create a permanent opening, however small, to permit the escape of air from the sac, for its accumulation was evidently due to a valve action in the outlet of the ventricle of the larynx, which permitted air to enter the sac, but let none come out. As before, the sac collapsed and from this opening he could pass a probe from the vallecula down through the ventricle and out into the trachea below, and could see into an extensive mucous membrane pocket. In spite of enlarging the opening with the Heryng punch and the galvanocautery it closed again in a few days, and the sac refilled, as before. At this time he saw the patient with Dr. J. Gordon Wilson, and they agreed that laryngotomy was unwarranted, as it would injure the potentially fine voice, and could not lead to extirpation of the extensive sac. The indication was to prevent the confinement of air in the sac, and they decided that the best way to accomplish this was to split the sac from top to bottom, cutting through the ventricular band, the aryepiglottic and pharyngo-epiglottic folds. This would divide branches or the trunk of the superior laryngeal artery which crosses the fossa piriformis to the larynx and epiglottis, but a previous tracheotomy would permit tamponnade. However, the patient wished no further operating at this time, and the speaker did not see her again until May 6, 1912. Conditions had remained the same until October 13, 1911, when she had another peritonsilar abscess in the left tonsil, which nearly suffocated her until it burst. Dr. Charles C. O'Byrne attended her, perfórming tracheotomy, and opening a swelling in the neck which obviously connected with the internal sac, and which was full of pus. The suffocation symptoms demanded the tracheotomy. Before he operated, however, the pus had reopened the old opening made in the vallecula and kept escaping at the base of the tongue. When Dr. Freer saw her in May, 1912, after this occurrence, he had for the first time evidence of an extension of the sac into the neck, as the patient could force pus out of the opening in the vallecula by pressing on a swelling over the left half of the hyoid bone. Air entered and left the opening with a squeak, which greatly annoyed the patient. At this time he advised her to let him extirpate the sac in the neck and do the internal operation which Dr. Wilson and he had decided upon as the best thing to do; but she again left his care, and he had not seen her since.

It is his opinion that the cause of the suppuration of the sac in October, 1911, was bursting into it of the peritonsilar abscess, and he thought that but for this the diverticulum would still have remained an air sac. But for the suppuration its extension into the neck would have remained unnoticed, and Dr. Shambaugh is mistaken in saying that the diverticulum in its air sac stage formed a swelling in the neck—this part of the sac was not filled with air.

In conclusion, he wished to refer to the remarkable article of Dr. J. Gordon Wilson, presented in the Chicago Oto-Laryngological Society some years ago, in which he showed the connection between laryngeal diverticula in man, and the air sacs of the roaring monkeys, specimens of the monkey's larynges with the distended ventricular sacs being shown.

Dr. Shambaugh, in closing discussion, stated that he regrets that he is not able to acknowledge having received any suggestions from Dr. Freer regarding the treatment which was of any assistance in the handling of this case. It is hardly necessary to point out that Dr. Freer has confused the term laryngectomy with laryngo-fissure. Neither Dr. Lewis nor Dr. Shambaugh at any time had contemplated a laryngectomy but had considered doing a laryngo-fissure. The failure to get a more satisfactory result in the work done was because during the removal of the sac they had stopped short of doing a laryngo-fissure. This part of the work was planned and carried out by Dr. Lewis, who did not even know that the case had seen Dr. Freer two years ago, or that Dr. Freer had offered suggestions regarding treatment.

Dr. Freer said that Dr. Beck heard him make the suggestions.

Dr. Lewis, in closing, said that he thought the only thing that ever cured cases of laryngeal diverticula was laryngo-fissure. He exposed the sac by the external operation, and thought that by splitting the cartilage and everting it the larynx at any time, and after a tracheotomy tube was fissure would fill up again, but it did not. The whole operation could be done by splitting the cartilage laterally, because the thyrohyoid membrane is exposed. The external sac is exposed, and the work can be done from the outside.

EXHIBITION OF CASES OF COMPLETE LARYNGEAL STENOSIS OPERATED ON BY BY LARYNGO-FISSURE AND LARYNGOSTOMY.

Dr. Joseph C. Beck exhibited a baby one and one-half years old, with the history that the baby fell over a bureau drawer and struck its larynx. The child was then taken to a doctor, because of difficulty in breathing, who said that the child must have swallowed or inhaled some foreign body. The patient was then sent to a hospital, where an x-ray picture was taken, which it was thought showed a foreign body, and operation was advised and performed, but no foreign body recovered, and so search for it was abandoned. Following this a tracheotomy was necessary and the tube had to be retained. If the tracheotomy tube was removed at any time it led to a choking sensation. Then the child was sent to a general surgeon for examination and he found nothing to explain the condition and inserted a larger tracheotomy tube. When the speaker first examined the case he found that the ligament that supported the epiglottis must have been separated, because the epiglottis seemed to be lying over on one side. On looking between the cords he found a complete blocking below that point. He decided to operate by laryngo-fissure. Chloroform was used as an anesthetic, as ether had been previously used very unsatisfactorily. He took the anesthetic very badly—in fact, collapsed, and was practically dead on the table, and artificial respiration was resorted to without any response. The operator placing his mouth to the tracheal fistula and inflating caused breathing to return normally. Then a laryngo-fissure was performed, resecting the scar tissue within the larynx and trachea, and a laryngostomy tube inserted—the up-and-down tube of Jackson, which has served the speaker very well in all his cases. This laryngostomy tube was left in for ten days, being covered in addition with a rubber tube. The tube has now been out about ten days and the child at the present time is able to breathe through the mouth without any difficulty. The external opening is practically closed. There are a number of scars on the neck, and Dr. Beck is going to do a subsequent plastic operation on the child. The child has no voice and has not uttered a sound. In most of these laryngostomy cases it is necessary to do a plastic operation subsequently to close the external opening, but in this case it will not be necessary.

The second case was that of a man, first seen three years previously. He came to the hospital with symptoms of marked suffocation, requiring immediate tracheotomy. At first it was thought to be due to carcinoma, but a removal of a piece of tissue showed on examination that it was of a different

nature, proving to be a marked case of syphilis. It was impossible to introduce anything through the worn for some time the larynx was split. After he was treated sufficiently for the syphilis so that a negative Wassermann test was obtained, the larynx, however, remained absolutely obstructed, and the speaker did a laryngostomy. The laryngo-fissure had to be done with bone forceps because the thyroid cartilage was ossified (shown subsequently by microscope), introducing a very large up-and-down tube, which was left in place for two months. It is necessary in these cases to retain the tube for a long time, packing on top of it, in order that the thyroid cartilage remains open. Later the wound is closed by laryngoplastic. The method used by the speaker for closing the larynx after the cartilage remained open was illustrated by the speaker on the blackboard. The patient breathes perfectly normally and has a hoarse voice, but a fair one.

The third case was one of a man who had a chronic suppurative ethmoiditis that caused the secondary perichondritis of the larynx, making the breathing impossible. It was impossible to get anything through except a very small probe. Immediate tracheotomy was necessary. Incisions within the larynx and dilatation were tried unsuccessfully, so the speaker decided to do a laryngo-fissure and subsequently laryngostomy. At operation a very large stricture was found in the trachea, close to the substernal notch, a stricture that would not permit the passage of a small pencil. The whole interior of the larynx and trachea, for that matter, was filled out with a mass (of which the speaker showed specimens) of hypertrophic mucous membrane. The epithelium was enormously thickened, as was the epithelial tissue. He proceeded in a similar manner as in the other two cases, putting in an up-and-down tube, packing on top of it, and finally succeeded in keeping the larynx and trachea open. Then he wished to close this external opening with some solid structure, instead of skin, fearing retraction. He thought he would transplant a rib as a support, and therefore put a piece of rib into the subcutaneous tissue in the neck in close proximity to the opening, planning later to make a flap including the healed-in rib, but there is where Dr. Beck made his first mistake. He simply made a flap with the rib in it, turned it over and sewed it into the gap of the thyroid cartilage, thus closing the wound, but he failed to cover the granulating surface at once with skin from the other side. This piece of rib was lost, and that first operation was a failure. Then he decided to try the Kusch operation of transplanting a toe to the hand and then the neck. However, the patient was frightened one night during sleep, shifted his position within the cast, and severed toe and hand. This operation was also a failure. Dr. Beck intended to implant another solid body, namely, transplanting the clavicle, using the Manley method.

(Since presenting the case this last-mentioned operation was performed with success, and about two months later the final closure of a little slit was made by employing the neighboring skin. The patient has only three fingers on one hand, and that is the reason why Dr. Beck did not employ the finger method of closing the larynx defect. The result is fair breathing and a fair voice. It will be necessary, however, to employ dilation to enlarge and keep up the breathing space. Dr. Beck has done this on the patient several times by the suspension method. He wished to call attention to the introduction of an intubation tube by suspension, which is very easy of performance.

DISCUSSION.

Dr. Otto T. Freer suggested the method of taking a fine dental circular saw with a dental hand-piece for the purpose of entering these hard cases of blocked-up larynx. He referred to a case of a larynx of this sort, in a case of carcinoma, where he did a laryngostomy. With this saw it is possible to make a fine line, without any other violence, such as the bone forceps naturally implies.

Dr. J. Holinger said that in 1898 or 1900 he saw a patient with fracture of the larynx. The man was a plumber's helper, and in carrying a cast iron sink up a steep incline fell and struck with his neck on the edge of the sink. He lost his voice at once, and had difficulty in breathing. He came to the speaker the next day. The larynx appeared compressed from the front backward against the vertebral column. The lower part of the pharynx was normal. Apparently only the vocal cords were injured. They were immovable, red and swollen. The hyoid bone was not fractured. Dr. Holinger compressed the larynx from both sides, whereupon, with distinct crepitus, it took its normal form. When he looked at it again it was evident that the fragments had adapted themselves very nicely. Nothing else was done, and after about five weeks the voice came back and the patient made a complete recovery.

Dr. Holinger asked Dr. Beck how he thought the fracture of the hyoid took place, which part was fractured, and what was the displacement of the pieces? Furthermore, he would like to know what the conditions are at the present time—are the fragments movable; are they united, and are they in anything like normal position?

Dr. Beck, in closing, said that he did not see the baby at any time during the accident. It is now about eight months since the accident occurred. He found the hyoid bone intact, and everything all right. The trauma occurred below the cords; the cords themselves were all right. When he opened the larynx he found this mass of connective tissue subglottic. He did not think that the operator who looked for the foreign body went in the larynx at all. The cords are all right, and the child will have a good voice when it learns to speak.

RADICAL MASTOID.

Dr. Charles M. Robertson said that simple mastoiditis is caused by lack of drainage in the drum membrane. The general surgeon thinks he can do a mastoid as well as a specialist, and for that reason he spoke more particularly to the general surgeon. We say, then, that a mastoid is a sequel of a suppuration of the middle ear. Nearly all suppurations of the middle ear, where the discharge is profuse, are due to mastoiditis. This suppuration extends at least into the antrum cell of the mastoid and perhaps to the terminal cells.

In small children the openings on the surface of the bone allow a great deal of pus to escape into the subperiosteal space, and in these cases the mastoiditis

becomes a subperiosteal abscess. The old method of treating such cases was to cut down by the Knight incision, to allow pus to escape, and the operation was then supposed to be completed, and was known as the simple mastoid operation. That is no operation at all and has nothing to do with the mastoid. If these cases were allowed to go on the pus would probably break through.

The mastoid operation, as he has seen it performed by the general surgeon, consists in boring a hole into the mastoid and letting it go at that.

As we understand the simple mastoid operation, it is an elimination of all of the cells, whether they be deep or superficial. There are two types—one conserving the mastoid antrum and the other sacrificing it. In acute cases of mastoiditis some of us have an idea of saving the antrum cell of the mastoid, for the reason that the case heals better and we have, as a result, a middle ear that is added to by the antrum cell. In the old operation, however, the antrum cell is destroyed. That is supposed to give a better middle ear, but whether or not that is going to take the shape of a policy that will be proper or not, the speaker did not know.

There is another mastoid operation called the antro-meatal operation, in which the simple mastoid is done and after that is completed the posterior wall of the external auditory canal is cut away down to within three or four millimeters of the aditus tympanicus, and the meatal flap is pushed back through the wound and the cavity treated through the meatus instead of by the wound opening behind, which is done in the simple operation.

In the radical or complete operation the mastoid cells are completely exenterated. The bone is cut down over the attic. The attic, the aditus ad antrum and the external auditory canal and mastoid cells are all drawn into one cavity and the eustachian tube destroyed. Very many radical operations are made on cases that exhibit chronic discharge, and these chronic discharges should be differentiated before an operation is made. There are very many cases of chronic discharge of the middle ear in which the discharge does not come from the antrum or the mastoid cells. Many of these cases are now operated on by the radical method when they should not be operated on at all. There are cases of weeping eustachian tubes.

The speaker did not go into the indications of the different forms of operations, only that we say in the simple mastoid operation we drain the cavity of the mastoid cells for a lack of drainage, which lack of drainage produces temperature and other symptoms, and in severe cases indications of brain complications, such as sinus thrombosis or meningitis or extradural abscess. The meatal mastoid operation is used when we desire to produce a very fine cosmetic effect, but is contraindicated in all cases of tuberculosis and syphilis, and in cases where there are cholesteatomatous masses.

Preservation of hearing is the main feature in doing the simple and antro-meatal operation, while after the radical mastoid operation the hearing is usually not so good as before. One reason for this is because the middle ear is obliterated, the ossicles are gone, the drum membrane is destroyed, the eustachian tube is closed, and the ear is covered with an epithelial lining rather than mucous membrane, and on account of this the oval window does not transmit the sound as it should, owing to the inelasticity of the skin covering the oval window.

The speaker next called attention to certain markings on the outside of the mastoid process of the temporal bone, which are not mentioned in books. One in particular, the lamina cribrosa, which he always observed gives a lot of assistance in marking out the line for operation by denoting the depth of cells over the sinus. (Dr. Robertson then illustrated the steps of the operation on the blackboard.)

The method he has adopted in operating on cases of mastoiditis which makes the work very simple is as follows: First, he determines the line of incision; the top of the opening in the cortex is on a level with the top of the meatus, and is three or four millimeters behind the meatal orifice. The original opening is a round hole, and he goes down immediately, so that at a depth of one and a half centimeters he is directly in from the spine of Henle. He then enters the antral cell. Then the external cortex is removed throughout. Next he chisels out the tip cells of the mastoid, paying no attention to the tissue between this and the antrum cell, until the mastoid tip is entirely clean. Thus there are two holes, one in the tip and one in the antrum, and the lateral sinus lies between, covered by cells. After exposing the lateral sinus wall, the posterior angular cells are taken out. After that the simple mastoid operation is completed, and then we come to the second step, which is cutting down the bridge. So many operators have so many different ways, all just as good as the one employed by the speaker, but he thinks his is the simplest one. (Indicating on blackboard.) After this he pays no more attention to the mastoid cavity. He makes a cut directly on a level with the floor of the cranial cavity, coming forward as far as the anterior border of the meatus. Care must be taken not to come too far forward for fear of opening the glenoid fossa. In cases where the external convolution of the brain dips down, the floor of the brain can be followed until reaching the level of the second convolution. On approaching the middle ear, care is taken not to get any of the posterior wall of the external auditory canal at all. He cuts clear through on the superior wall into the middle ear. After that he has no trouble about the facial nerve, because it does not come above this point. He has no trouble with the semi-circular canals, because he knows that they are at least below the upper third or three-fourths of the posterior wall. Then the wall is cut through and the whole ear is exposed. He trims down the posterior wall to the floor of the aditus ad antrum, which finishes that part of the

operation. He then destroys the eustachian tube as far down as the isthmus. The eustachian tube belongs to the middle ear as far as the isthmus, and from there down it belongs to the throat. He is very careful in cleaning out the eustachian tube, because he realizes that there is but a thin sheet of bone between that and the internal carotid artery.

Many people do not understand exactly where to find the canal for the tensor tympani muscle. It comes in from the midle ear and extends across just above the oval window. The facial nerve lies just exactly above the tensor tympani muscle. The tensor tympani muscle lies exactly in front of the oval window.

After the whole cavity is thrown into one, the cutaneous canal of the ear is cut, either reflecting one flap up or one down, or as he generally does the flap is lifted up into the roof of the cavity by cutting around the concho-meatal margin and splitting the membranous canal on the lowest line. This is practically the entire operation.

If one desires to expose the cerebrum, it may be done from above. If one wishes to expose the lateral sinus, all that is necessary is to chip off the wall here (indicating), remembering that as you come down on the lateral sinus the facial nerve lies just about a millimeter above it on the posterior wall of the meatus.

In curetting the middle ear we must remember that the facial nerve lies just a millimeter above the oval window, and therefore great care must be taken, because even tough handling of the facial nerve canal is apt to cause grave results.

DISCUSSION.

Dr. Norval H. Pierce said that in 1873 Schwartze published his first communication on the treatment of mastoid inflammation; previous to that time there was a strong feeling among otologists and general surgeons against the surgical opening of the mastoid for any purpose. But, based on von Tröltsch's dissections and his own of mastoids, he concluded that it was a safe procedure, and in 1873 published his first communication. From 1875 to 1883 he published the results of a number of cases. He treated both chronic and acute suppurations in the same way. His procedure was simply to do what is now termed the simple mastoid, cutting down and elevating the periosteum and chiseling a hole in the mastoid antrum. In acute cases the results were very favorable, and in chronic cases they were very unfavorable. Most of the cases died of cerebral complications or septicemia. His method of keeping the wound open was varied, but he at last concluded that a lead nail was the best way. This lead nail was introduced into the antrum and kept in place by a steel band that went around the head. Of course, irrigations with various solutions were used, and the matter remained in that condition until Kuster published his paper in 1889, in the *Deutsche Medicinische Wochenschrift*. His method of treating the mastoid was a part of a general surgical proposition. He endeavored in this paper to establish a method for treating suppurating cavities with non-collapsible walls, such as the mastoid, antrum of Highmore and the pleural cavity. As regards the mastoid, he divided suppurations of the ear into two classes. First, those cases in which the antrum alone was involved, and, second, those in which the antrum and the cavum tympani were involved. In the first class he operated by the Schwartze method, except that he took away the entire mastoid covering, his proposition being that no overhanging wall should be allowed to remain in these operations, and that the cavity should be obliterated. In the second class of cases in which the cavum tympani was involved he took away the external auditory canal down to the cavum. In certain other cases, where he could demonstrate that the contents of the cavum were diseased and necrosis of the ossicles existed, he removed these and extended a drain from the post-auricular external opening through into the cavum, and out into the external auditory canal. Von Bergmann went a little further, and not only took away the external auditory canal—the posterior portion, but also the superior portion of the canal. Then Stacke came along with his flap, which really completed the development of operations on the mastoid, as they are found today. All other operations have been modifications of these original ideas.

Regarding the operation on the mastoid in acute suppurations and preservation of what has been called the antral box, the speaker thought this was very important, and he is more and more of that opinion as his experience enlarges, and believes that this fact should not be lost sight of. If we scrape away, or chisel away, or remove in any way the entire three walls of the antrum, we are going to get an overgrowth of mucous membrane from the cavum tympani, which will permanently form a large cavity, lined with very poorly nourished muco-periosteum, which will be the seat of inflammation every time that the cavum tympani is infected. This is the cause of the breaking-down of the mastoid wound which is seen very frequently in children, because this muco-periosteum has prevented the closure of the wound by the formation of osseous tissue. The speaker could say positively, from his experience, that there was nothing gained by scraping away these walls of the mastoid. Most men held the opinion that the suppuration and softening of the bone took place through the lateral wall of the antrum towards the surface. This is not so. The softening invariably takes place in the floor of the antrum because, as is known, all the mastoid cells either indirectly or directly communicate with the antrum, and it is the blocking of these little tubes which communicate with the cells that produces the backing up of the pus in the pneumatic spaces, and it is the softening of the bone about these tubes which first causes the antrum to break down at the bottom. Almost invariably you will find a fistula which runs downward from the floor of the antrum back of the hard bone of the external auditory canal to the terminal cells of the mastoid. Almost invariably this is the case. If one is very careful to go from below in dissections, he can find this fistula and get up into the antrum with a probe. When one gets into the antrum in this way, he takes away all the softened bone, wherever it may be, and the posterior cells, referred to by the essayist. Clean away the softened bone everywhere, if you like, but leave the box of the antrum alone, and when the removal of the pathological tissue is completed, put a drainage tube of the smallest size into the preformed antral perforation, and then pack the rest of the osseous wound with gauze. The soft parts are sewed up, except a portion at the lower angle, for the admission of the tube and the gauze. The question might be asked: Why introduce the tube? Is not the hole in the antrum sufficient? The tube, however, serves a very good purpose. After the third or fourth day, without unpacking the mastoid wound, it is possible to syringe out the cavum through this tube, and the fluid either goes through the Eustachian tube or comes out through both the Eustachian tube and the perforation in the tympanic membrane. In the majority of cases only one washing is required, and then the cavum tympani is found to be dry. The very moment it is found dry the tube is removed, and on the fifth or sixth day the dressing is removed, and the result is that in from one week to three there is complete cure. That is quite an advantage over the old method of operating, and the wound back of the ear is not so unsightly as the old wound, where it was packed open and the soft parts made to fill up the cavity within the mastoid.

The main idea in the speaker's mind was when to perform the radical mastoid, and when not? The general broad proposition is that a radical mastoid should be performed when there is evidence of destruction of the bone within the mastoid in chronic cases, and this is sometimes very difficult

to ascertain. Perhaps the best way is to centrifuge the pus that comes from the ear, and if well-recognized bone chips are found, then the indication is already present, because we know that the bone is being detsroyed, and it is for the purpose of preventing complications such as softening or necrosis up into the brain, the middle or posterior fossa, or the sigmoid sinus, that operation is performed.

As regards the preservation of the middle ear, which has been advocated by Heath, in the majority of chronic suppurations there is necrosis of the ossicles, especially of the incus, and in a certain number of other cases necrosis of the tegmen tympani or of the promontory, so that Dr. Pierce does not believe, when a case has resisted all manner of ordinary treatment, and a radical operation has been decided on, that it is worth while to consider the preservation of the sound-conducting apparatus, because in these cases the adhesions, dislocations, etc., which form between the malleus, incus, stapes, and promontory, are so great that the hearing is very much reduced, in the majority of cases. The advantages of the radical mastoid are far beyond those of any other method of operating, and while it may not benefit or increase the audition, it will not diminish it.

Dr. Otis H. Maclay asked Dr. Robertson, in closing, to mention the technic he employs somewhat more in detail, as it would be of interest to all the members present. The point is, is it advisable to do much with the bur or not? Some operators advocate doing practically all the work with a bur.

Dr. M. L. Harris said that in a great many of these cases of mastoiditis, where the trouble was beyond the ear, he has had to go ahead and take out the attic and also operate on the sinus a number of times. When these cases get beyond the specialist they come to the general surgeon.

Dr. J. Holinger said that the radical operation is undoubtedly mutilating. In children, conservative operations will often result in well functionating ears, under conditions where in grown people radical operation would have been indicated. This point was well taken a few years ago by Dr. Crockett, of Boston, and emphasized by Dr. Pierce in the discussion of the evening.

As to treating the sinus, he thought it should be laid bare very extensively, but otherwise left alone. Take away the surrounding bone and eliminate all possibility of retention, but do not touch the sinus itself, because very often there are trombi which at operation are detached, and carried in the lungs. The results of this method are good. He has operated this way for at last twenty years.

He did not think that the difficulties of the radical operation have been sufficiently emphasized. The difficulty in old cholesteatoma is not the great number of cells, but the scarcity of cells. There are usually hardly any cells, and the few are small and difficult to detect. The bone is thick and eburneous. The antrum is not larger than a bean. If there is any gathering of pus in such a case, there is no possibility of drainage. The direction of least resistance is toward the internal ear. He has never encountered any difficulty in finding the antrum, no matter how small it was, by simply following the external canal, then the aditus ad antrum to the antrum. The lateral wall of the aditus ad antrum is always difficult to remove. We must ascertain whether or not the incus is present. He has for this purpose a fine hook probe, which allows him to feel through the remnant of the external canal the aditus ad antrum, and by means of this probe he can always find the bridge, even before he is really down at it.

Another point: In making the flap, one must take away the ridge of the external canal to the very bottom. In this procedure the greatest number of injuries to the facial nerve occur. If a part of the posterior wall of the canal is left it forms afterwards a ridge in the cavity, which is always sensitive and often granulating.

The aim of the operation is to create one cavity lined with epidermis; all the excavations and niches must be eliminated.

Coming back once more to the after-treatment of mastoid operations in acute cases: The antrum and cells are supposed to be a reserve reservoir for air in the middle ear. If we wish to advance this function, it is well to inflate air gently by Politzer's method as soon as the bone has been filled with granulations. Stress must be laid on the word "gently." The air must not be forced through the granulations. This will often benefit the hearing and avoid retraction of the drum membrane and adhesions in the middle ear, which may mar an otherwise perfect result.

Dr. Pierce asked Dr. Holinger whether he never opens the sinus in cases of thrombosis of the sinus?

Dr. Holinger said he never opens the sinus at all. He lays it bare very extensively. The less we work with the sinus, the less chance we have of retrograding advancement of the thrombosis towards the other sinuses at the base of the brain and of loosening thrombus masses which may lead to embolisms in the lungs.

Dr. Robertson, in closing, said that the following were indications for a radical mastoid: Cases that had not healed from simple operation and operations for preservation of the drum membrane, and all cases where the bones had lost their integrity should be operated on by the radical method. Also cases with ropy discharge of clear fluid coming down from the attic, which is indicative of destruction of the bone tissue.

In those cases of acute suppuration, no matter whether the other cells are affected or not, the tip cell may be affected. If you wish to, it is very easy to destroy the cells of the mastoid, leaving the antrum cells, by attacking it from below.

He thinks that the catheter in the bottom of the antrum would be a good idea. He has never tried it, but will do so when he gets an opportunity.

He attacks thrombosis of the jugular artery and lateral sinus very differently from Dr. Holinger. He is afraid to leave a sinus with a plug in it. In all such cases it has been his practice to tie the jugular off below the plug, so that in the manipulations of the lateral sinus you prevent the sliding off of the thrombosis into the circulation below, and the veins entering the jugular blow the bulb should be tied off, too. Then the sinus is fully exposed from the upper space down to the bulb, and the two extremities are closed by temporary plugs by the assistant and the sinus slit in its entire extent. Then the assistant takes the pressure off the upper plug, and if there is no sinus thrombosis a free flow of blood follows. Then the lower plug is taken away to see if you get a flow from the jugular vein and superior and inferior petrosal sinus. If this is plugged the operation is extended into the neck and the jugular is either taken out or destroyed by simply tying. Of course, we cannot take away the superior and inferior petrosal, but we can get most of the plug out.

There is usually quite a little swelling for a few days after the operation, but after a little the collateral circulation takes care of it.

Dr. Maclay asks for more details in regard to the operation. In his operation he takes off the cortex with the straight chisel or gouge. After that he uses the burr. He has found, with the use of the burr, that it is desirable not to use it to the extent of making the tissues too smooth. If they are made too smooth, the granulation tissue does not take well, thus retarding the healing of the wound. All of the cells should be destroyed, leaving the bone a little rough.

Dr. Holinger said it was not necessary to do a radical operation on children. That depends upon the symptoms presented. If the child has necrosis of the bone, it does not make any difference whether he is twelve or fifty. It is the condition met and not the age that indicates or contraindicates operation.

CHICAGO OPHTHALMOLOGICAL SOCIETY.

A regular meeting was held October 19, 1914, with the president, Dr. Wesley Hamilton Peck, in the chair.

CONSERATIVE TREATMENT OF PENETRATING WOUNDS OF THE EYEBALL.

Dr. Albert E. Bulson, Jr., Fort Wayne, Ind., said it was his experience to see and care for a large number of eye injuries, and in looking backward

it seemed as though the proverbial peck of seriously injured eyeballs had been removed because conscientious judgment seemed to indicate the preservation of the eyeball without serious danger to the fellow eye was an impossibility. With increasing experience it seemed to him that some of the eyeballs that were sacrificed might have been saved. Yet in making this statement he was not unmindful of several serious as well as pathetic results, due to mistaken judgment in following conservative treatment, that had come to his attention.

He presented a brief report of three such cases with a view to elucidating the subject.

In all these cases the exciting eye showed no marked signs of improvement while under treatment for the existing uveal disturbance, and under such circumstances it would seem that without favorable progress during the first seven to ten days subsequent to the injury early enucleation was indicated.

There was a happy mean between conservatism and radicalism when it came to a decision as to what treatment served the patient's interest best in penetrating injuries of the eyeball. That many injured eyeballs were slaughtered ruthlessly because the surgeon desired to be on the safe side, could not be doubted, but while every ophthalmologic surgeon should have a wholesome fear of sympathetic inflammation, it was his duty to consider carefully all the possibilities for both good and harm and to adopt any measures that offered hope of saving either vision or eyeball without incurring undue risk. Taking into consideration those extremely rare cases where sympathetic inflammation had occurred after a prompt enucleation, thus indicating the rapidity with which the sympathetic process might develop, he still maintained that in a large proportion of penetrating wounds of the eyeball, even in the ciliary region, we were justified in making an attempt to save the eye, not forgetting that such an eye required clinical observation and with the decision that the condition was growing worse instead of better, enucleation should be performed at once. He was also strongly of the belief that mercury and sodium salicylate given internally and carried to the physiological limits, and the subconjunctival injection of a solution of cyanide of mercury greatly aided in the prevention of sympathetic inflammation. Hexamethylenamin also might be employed with possible benefit.

As an example of cases that at the time of injury might have been considered appropriate for enucleation, the following case was reported:

Case 4. F. L., male, aged 17. Brought by family physician for enucleation. Gave a history of being struck in the right eye with a ten-penny nail flying from the hammer of a fellow workman. The nail penetrated the eyeball and was pulled out by the patient. Patient was seen by him two hours after the injury. The eye presented an irregular wound about three millimeters in length, extending backward from a point about two millimeters from the sclero-corneal junction. A small bead of vitreous and a button of iris presented.

Vision nil, as the anterior chamber was full of blood. The button of iris was very carefully crowded forward with a sterile spatula, the edges of the scleral wound touched with tincture of iodin, and the conjunctiva slid over the wound and stitched. Patient put to bed and given ninety grains of sodium salicylate per day. An uneventful recovery resulted and with correcting lenses vision of 20-20 was regained. At no time was there any marked injection or tenderness of the eyeball, and the favorable result had continued now for considerably over a year.

Two similar cases were cited.

In the management of these cases of penetrating wounds of the eyeball several things were worthy of consideration. If there had been considerable loss of vitreous in connection with injury of the ciliary region, enucleation or one of its substitutes was indicated. The same was true of extensive injuries of the ciliary body, iris and lens. Injury to eyes that were already the seat of a pathological condition was also more likely to require immediate removal. Injuries accompanied by the retention of a foreign body in the eyeball formed a group of cases that should be managed according to well established rules.

Scleral stitches were not only difficult to place in the edges of a punctured wound, but were unnecessary if the conjunctiva was slid over the wound and carefully stitched. Furthermore, the conjunctival flap had a tendency to prevent secondary infections, which were a prolific cause of mischief in trauma cases. He was a firm believer in the efficacy of tincture of iodin or 25 per cent. of trichloracetic acid touched to the wound edges, and unless iodin had been used he dressed with bichlorid ointment all of his operative cases.

The patient should be put to bed and kept there for a week. A calomel cathartic, followed by large doses of sodium salicylate, acted beneficially in preventing untoward results. Hexamethylenamin in large doses was also of possible benefit, although its irritating effect upon the urinary tract must be taken into consideration. The development of pain, tenderness and increased congestion was an indication that progress was not satisfactory, and if those, or any one of those symptoms continued, the eyeball should be enucleated. Generally the fate of the eyeball, according to these rules, would be known within ten days or two weeks following the injury. No chances should be taken in a uveal inflammation of traumatic origin.

DISCUSSION.

Dr. Frank E. Brawley said it was a routine measure with him to use large doses of urotropin in the beginning of these cases. At least one hundred grains a day should be given in solution without the addition of any salt, such as sodium citrate or any of the alkaline salts, because the fluids of the body must be slightly acid if the urotropin was to be broken up properly and exert its prophylactic action.

When there was irritation of the urinary passages, the urotropin should be stopped for a while and several doses of some alkali given to alkalinize the urine and stop the urotropin from breaking up. Experiments of Kopetsky of New York had shown the great value of urotropin.

Dr. Thomas Faith said conjunctival sliding in Dr. Bulson's cases was a very important thing. If there was primary infection one could not do anything with it. The conjunctival flap would prevent secondary infection. The bichloride ointment was valuable in these cases. Aonther thing was, the patient should be given a chance to recover without meddlesome dressings. We should leave the eye tied up long

enough to let the conjunctival flap unite before washing it out and putting in a solution because sometimes in hospitals, where they were supposed to be careful, the droppers were not clean, the solution was not sterile and something was introduced that caused trouble. If we let it go for forty-two or seventy-two hours the conjunctiva would be sufficiently united to the edge of the wound to protect it in the future. He had been surprised at the number of eyes he had been able to save by using a conjunctival flap.

Dr. Bulson, in closing, said the principal object in presenting these cases was to call attention to the possibility of saving many eyes that fomerly were thought to be hopeless. Many eyes were enucleated that might have been saved.

EXPULSIVE RETROCHOROIDAL HEMORRHAGE FOLLOWING CATARACT EXTRACTION.

Dr. Horace M. Starkey, Rockford, Ill., reported the following case:

The patient was Mrs. W., aged 87, an acquaintance and patient for about twenty-five years. Commencing central opacity of the right lens was first noted April 20, 1906, and a little later cataract also began to develop in the left eye and progressed until in 1913 there was good perception and projection in the right, while in the left scarcely sufficient sight remained to enable the patient to get around her own house. Incidentally, it might be mentioned that during this time a hyperopia of 2.D. was converted into a myopia of 4.D.

During the past few years the patient's general health had been rather precarious, and while operation was frequently requested, consideration of it was postponed from time to time until the health should continue favorable for a longer time. During the first part of 1914 the condition steadily improved, until by July it was felt that the desired operation might be permitted.

There was nothing in Mrs. W.'s condition to cause more fear of hemorrhage than in the average patient, but rather the contrary. Her arteries were not degenerated, her physician, Dr. Helm, having stated that the arteries were more those of a woman of sixty-five than of one eighty-seven. The blood pressure a short time before the operation was 130 and never seemed much above that.

It was decided that the greatest safety lay in a preliminary iridectomy, and this was accordingly performed July 9th. The patient was quite nervous about the operation and made a sudden movement as the section of the cornea was about complete, so that the point of the keratome punctured the capsule, but a good iridectomy was done. The patient suffered a rather severe shock, with nausea and vomiting lasting a day or two, but made a good recovery with satisfactory coloboma and white sclera, so that by August 12th it was considered advisable to proceed with the extraction, in which he was assisted by his colleague and good friend, Dr. Fringer. The operation was typical, the section being smooth and ample and the lens coaxed out with a minimum of pressure or other manipulation. The speculum was removed and the patient, who had behaved very well, was told that the operation was over and that she should rest quietly with lightly closed lids for a few moments, when the eye would be dressed and she could return to her room. Very quickly a little vitreous appeared between the closed lids, the patient commenced to groan with pain, more vitreous and then blood appeared, and then the hemorrhage became quite profuse and the pain very severe. This hemorrhage lasted perhaps five minutes. It was impossible to tell just what ocular tissues were present in this escaping blood.

The patient suffered very severe shock and was so reduced that death seemed imminent for several days. She had gradually improved, but even now, after two months, was so weak that she could not sit up at all.

The eye healed in a few weeks and there was now little irritation. The upper part of the cornea was opaque, but there was but slight atrophy of the globe, showing that not all the contents of the eye were expelled.

There had been so relatively few of these accidents reported that it was deemed advisable to add this one to the list.

DISCUSSION.

Dr. Albert E. Bulson could sympathize with Dr. Starkey, as he had had two such cases in his own experience during the last twenty-two years. He also mentioned a case that occurred in the practice of Dr. de Schweinitz of Philadelphia.

In Dr. Bulson's first case the man had only one eye, the other having been destroyed by a gunshot injury. At any rate, there was some trauma, and the man came to him with a senile cataract. He had the patient carefully examined by an internist, something he did not always do. The urine was also examined carefully, and the internist thought the man was in fine condition for an operation. The combined operation was done and the extraction was perfectly uneventful. The speaker flattered himself in getting a splendid result, but after removing the speculum and telling the man the operation was over and he would soon be able to return to his room, in waiting for the collapsed cornea to fill up a little so that the dressing could be applied and the man be able to return to his room, the man began to groan and as Dr. Bulson looked over toward the table on which the patient was lying he saw blood rush out from the corner of the eye and it seemed as though the whole eyeball was coming out on the cheek. However, the bleeding stopped, the man was put to bed and made a satisfactory recovery.

Dr. Thomas Faith spoke of similar cases occurring in the practice of Dr. Fisher and Dr. Dodd.

EXTRACTION OF METALLIC FOREIGN BODY FROM VITREOUS BY GIANT MAGNET THROUGH SCLERAL INCISION.

Dr. Carroll B. Welton, Peoria, Ill., spoke of the things that influenced the prognosis of the eye from penetrating metallic bodies, and asked the question, what should be the procedure in eyes that contain a chip of metal in the interior of the eye

The proper course was to use the magnet in all cases as soon as possible after the injury. The more attraction power the magnet had the better, for with a rheostat the amount of pull could be accurately controlled. Although it was sometimes very difficult and, according to some authorities, impossible to extract a fragment of metal weighing 1/32 of a grain or less, nevertheless attempts at removal should be made.

If the metallic body had entered the eye through

the cornea, no matter where it stopped, whether in the uvea, lens or vitreous, an attempt should be made to draw it forward into the anterior chamber and then remove through the original opening or else make a corneal incision and then withdraw it. If the body should rest posterior to the lens and could not be drawn forward into the anterior chamber, then a scleral incision at a site nearest the metal could be made and an attempt at extraction with the magnet tried. If the particle had penetrated the eye through the sclera and lay posterior to the lens, then its removal should be made through the original wound of entrance, and no effort to draw it forward around the lens into the anterior chamber should be attempted. The opening in the sclera through which the metal passed into the eye might possibly have to be enlarged to permit of its withdrawal. If all attempts at extraction failed, then the eye should be removed, as an eye which contained a foreign body was ultimately lost.

Finally, each case of metallic bodies within the eye must be studied individually, as no single method of procedure would suffice to apply in all cases.

Dr. Welton related a case, the interesting features of which were: 1. That the patient was not absolutely sure that anything had even struck the eye. This showed that no reliance could be placed on the statement of patients as to whether or not a foreign body had penetrated the eye. 2. That the exact localization by means of an x-ray picture was absolutely needed in this case, and this should always be determined in every case of a metallic foreign body in the eye before any attempts at removal had been made. 3. That in all cases where it was suspected that a metallic foreign body was in the eye, the magnetic properties of such tools should be determined before any attempts were made at removal. 4. A remarkable thing in the case was that though the metal passed through the lens, except for a slight line of opacity along the path of the foreign body, it remained perfectly transparent. 5. The case showed further that the removal of foreign metallic bodies was in some cases impossible except through a scleral incision, and that good results were obtained by this method, even though it was contrary to the teachings of Haab.

DISCUSSION.

Dr. H. W. Woodruff had had a similar experience to the one related by Dr. Welton in which the foreign body penetrated the iris and the lens and was removed a few hours after the injury through the original opening. The lens did not become opaque. Reports of such injuries were made where the lens had been penetrated, and yet no cataract had been produced. He had seen experiments performed on rabbits' eyes in which the needle was plunged into the eye and opacity of the lens produced in the path of the needle slightly around it and then cleared up again in a few days.

He called attention to an accident that happened sometimes in removing steel through the corneal wound. Sometimes the piece of steel would lie behind the iris and the entire iris would come out with the foreign body. It was proper to do an iridectomy where there was no liability to such an accident. He spoke of a case where a large piece of steel weighing five grains entered the eye through the ciliary region. He saw the case a short time after the injury and removed the piece of steel through the original opening with some difficulty, but it was necessary to enlarge the opening before it could be taken out, owing to the size of the piece of steel. This patient made an uneventful recovery with absolutely no inflammatory signs whatever.

Dr. W. Franklin Coleman spoke of the relative merits of the large and small magnets in extracting pieces of steel or other foreign bodies from the eye.

Dr. A. C. Bartholomew of Van Wert, Ohio, said that according to the statement of a well-known electrical engineer, the ophthalmologist could not get a better result or a stronger pull with a giant magnet than from a small magnet.

Dr. J. P. Worrell, Terre Haute, Ind., recalled an instance in which a very small piece of iron entered the lens. It did not cause any swelling of the lens, yet slowly the lens became opaque. Later perhaps, if the patient had returned at the proper time, he might have extracted the lens.

As to opacity of the lens clearing up, he mentioned the case of a young man whose eye was stuck with a pin in which the cornea and iris and the lens were perforated. He had a small radiating opacity within a few hours following the injury. When seen the next day he had a very large triangular opacity in the posterior fornix. The ultimately cleared up and his eye became normal.

Dr. Major H. Worthington said that a foreign body in the eye was sometimes overlooked by the general practitioner who first saw the case. He recalled the case of a man, a sheet metal worker, who in punching holes in galvanized iron in a large tank in the country, felt something strike his right eye, although there was no pain except that sensation. At first, he went to a general practitioner, who examined the eye and told him there was nothing in it. He gave him boracic acid and told him to wear a patch over the eye, which he did for the first week. Dr. Worthing saw the patient two weeks later, at which time he was having pain. The eye was red and pupil irregularly contracted and there was some ciliary tenderness. The lens was clear. Under a mydriatic the fundus could be seen and the foreign body located in the vitreous. A skiagraph was made and the foreign body located and extracted through the scleral incision. The result was 20/40 vision with his correction. Patient had a hypodermic astigmatism of 20/40 minus 1. When he came to the speaker his vision was 20/30 minus 1 with glasses, and in the delay of two days in deciding about having an operation done his vision dropped to fingers at two feet. There was opacity in the vitreous. How long was it safe to allow a foreign body to remain in the eye?

Dr. Clark W. Hawley said, as to the length of time a foreign body might be allowed to remain in the eye, it would depend entirely upon the aseptic condition of the foreign body when it entered the eye. He recalled the case of a patient, eighteen years ago, where the foreign body had entered the eye and was not known to be in the eye at all. The second day after the injury the man went back to his work. Eight months thereafter the patient presented himself with a dilated pupil and wanted Dr. Hawley to reduce it. Vision in this eye was slightly reduced. There was no irritation about the eye. Upon looking into the eye he saw a piece of steel about the size of an ordinary pin head. He showed the case at the time before the Ophthalmological Society and men of considerable experience said that if the piece of steel was removed the man would lose his eye. He, with the assistance of Dr. Starkey, opened the eye in the same manner that had been described, made a conjunctival flap, took a cataract knife and made an incision and extracted a piece of steel with a small magnet. The piece of steel was in this man's eye eight months unknown to the patient or anybody. It entered at the sclero-corneal junction. The result of the operation was the man had 20/20 vision.

Dr. C. G. Darling said in the removal of a particle of steel through the scleral incision sometimes it became entangled in the choroid or in the edge of the sclera or in the conjunctiva, and Dr. Wilder in one of his cases had made and used a little speculum, the blades of which are five millimeters long, with very fine, short, sharp-pointed pins. An incision was made in the conjunctiva quite a dis-

tance from where the scleral incision was made, a few millimeters long, and the speculum introduced into the conjunctival incision. When the incision was made in the sclera the speculum was introduced into the scleral incision. The points on the speculum were only about a millimeter and a half or a millimeter in length, so that they did not enter the eye, but held the edges of the sclera apart. By means of this small speculum the wound could be kept open to facilitate the removal of the foreign body.

DR. WILLIAM A. MANN stated that sometimes a foreign body penetrated and lodged in the posterior wall of the sclera. The magnet would not touch it if it penetrated the sclera. He had had several such cases, and in only one of them was the eyeball removed and the foreign body removed in that way. Some foreign bodies would lodge in the back of the eyeball and in such cases an x-ray was of advantage in locating them before the use of the magnet to extract them.

PARINAUD'S CONJUNCTIVITIS.

Dr. A. C. Bartholomew reported the case of Miss T., aged 13, who was referred to him on February 14, 1914, by her family physician with the following history:

She first consulted him (the family physician) one week previously, complaining of a lump on the upper lid which scratched the eyeball. The eyelid drooped and there was some discharge in the corner of the eye. There was a piece of tissue projecting below the upper lid and this he grasped with a pair of forceps and pulled away. He did not notice the condition of the glands. The patient was suffering from jaundice at the time.

When seen by Dr. Bartholomew the left upper lid was swollen and drooping and a slight discharge was collected at the inner canthus. On everting the lid it showed a raw, bleeding, hypertrophied surface, involving the inner margin of the turned cartilage. The pre-auricular lymphatic gland was enlarged to the size of a small walnut and was tender to palpation. There was no fluctuation. One gland just below the ear was also involved and there was a slight ciliary congestion, probably from irritation of the cornea.

The other eye was not involved. Under 2 per cent. Adno, three applications every other day, and the use of a collyrium at home, the condition cleared up rapidly and patient was dismissed March 26, 1914.

Dr. Bartholomew also reported a case of unsuspected sarcoma of the eyeball.

DISCUSSION.

DR. W. H. WOODRUFF had had two cases of Parinaud's conjunctivitis. One of them was a mild case in a young woman She recovered in a few weeks. The infection was comparatively mild. She had the typical characteristic conjunctiva with enlargement of the glands to slight degree. She recovered with very little treatment.

The second case was in a boy, eight or nine years of age. The termination in that case was very unusual. He had considerable enlargement of the glands. The family physician opened a number of these glands, but they did not contain any pus. There was nothing but clear serous fluid in them. There were no organisms discovered at any time in the secretion of the glands. The eye recovered. He removed some granulations after a time because they were so large. The swelling or hypertrophy diminished and the eye returned to normal, but about six months later the boy died. The first week he declined rapidly, and then died without any other diagnosis than Parinaud's conjunctivitis having been made.

CICATRICIAL ECTROPION OF THE UPPER AND LOWER LIDS.

Dr. J. P. Worrell, Terre Haute, Ind., read a paper on this subject.

The patient, a man aged 54 years, in an attempt to rescue his wife from burning gas, was severely burned on the hands and face, losing most of his fingers and suffering such injury to the face that the contraction incident to the cicatrization resulted in complete ectropion of all the eyelids.

The patient came under treatment seven months after the accident and presented the following conditions: Below the level of the outer canthus the parts were lined and seamed and so adherent to the underlying tissues that little mobility was preserved. This condition was much aggravated by an injudicious attempt to correct the deformity made soon after the wounds had healed, as was evidenced by the heavy cicatricial lines. The forehead and upper part of temporal region was smooth, the burn having destroyed the superficial layers of the skin. The right eyebrow was wanting and the outer third of the left. The upper lids were everted, the tarsus curved on itself and thickened, the eyelid rolling out when the patient looked downward. Cul de sac preserved. The lower lids were stretched downward, obliterating the cul de sac. The conjunctival surface was red, somewhat rough and lying in the plane of the skin below. The tarsus was adherent to the underlying tissues. The lid margin was indicated simply by the line of transition from the mucous membrane to the skin and the presence of a few cilia. The conditions in the right were aggravated by the displacement downward and outward of the outer canthus, including the external palpebral ligament.

Correction of the deformity was made by a series of operations, running over a period of several months. Each operation was limited to one lid, inasmuch as the operation was necessarily a tedious one and it was impracticable to prolong the anesthesia. The method employed was the use of sliding flaps, supplemented by Thiersch and Wolfe grafts. In restoring the lids proper, the principle of removing the new cicatricial area as far from the lid margins as possible, as emphasized by Hotz, was followed, such modification of his method being made as the exigencies of the case demanded.

The final result was most gratifying, restoring the lids to their normal position with preservation of their function. From a cosmetic standpoint it was fairly satisfactory.

After the restoration of the lids to their place the condition of the cornea greatly improved, so that the iris could be seen throughout its entire circle. The anterior chamber deep, showing that what was thought to be an adherent glaucoma was but hypertrophy of the epithelium in the attempt of Nature to preserve the eye against the evil effects of exposure. Behind the clearest portion of the cornea iridectomies were subsequently made, giving vision by which ordinary newspaper type could be read.

The diversity of condition afforded an opportunity for the trial of various methods of covering the raw area so that the comparative merits of flaps and the various forms of grafts could be advantageously studied. Thiersch and Wolfe grafts played a larger part in the correction of the trouble than did sliding flaps. Of these the Thiersch graft gave good results, "taking" easily, and was followed by little or no contraction of the underlying tissues. The chief trouble with Wolfe grafts is their marked disposition to contract. However, where it is necessary to "fill in" they furnish a means of building up lacking parts that make them indispensable. The effect of their contraction can be avoided in a large degree by making them of ample size and in exercising great care in their preparation, avoiding traction, and reducing their manipulation to the minimum.

The dressing consisted of an extremely thin layer of absorbent cotton wet in normal saline solution, over which was placed a dry pad of cotton covered with some impervious material, the whole being swathed in gauze and bandages to secure quietude of the parts and maintain equable temperature.

DISCUSSION.

Dr. A. Bulson agreed with Dr. Worrell in regard to the merits of the Thiersch and Wolfe grafts. The Thiersch graft was much better because it was more flexible. On the other hand, the speaker believed that a properly trimmed Wolfe graft would oftentimes give a quicker and more satisfactory result than a Thiersch graft. Attention was called to the value of scarlet salve in bringing about epidermization where the grafts failed to cover the entire surface, where there were eyelets of raw tissue, and where the Wolfe or Thiersch graft had not taken. He had seen excellent results in such cases by keeping these areas covered with salve which was so highly recommended by skin men.

Paul Guilford. Secretary.

FULTON COUNTY.

The seventieth meeting of the Fulton County Medical Society met in the auditorium of the Y. M. C. A. building in Canton, Ill., December 1, 1914, and was called to order at 1:30 p. m. by President Howard.

Minutes of the October meeting were read and adopted. Necrologist Stoops reported the death of Drs. Murphy and Flack. On motion of Drs. Cluts and Coleman the report was adopted and the president instructed to appoint a committee of three to draft resolutions of respect concerning Dr. Murphy. Dr. Flack's resolutions were adopted at the October meeting. The president appointed Drs. Stoops, Cluts and Hayes as such committee, who later presented the following, which was adopted:

Whereas, Death has removed from our midst our professional fellow and co-worker, Dr. Veda C. Murphy, who died on October 13, 1914, therefore be it

Resolved, That it is the sense of this meeting that the members of the medical profession and of the Fulton County Medical Society have lost an esteemed, honored and highly conscientious member, a loyal friend, a worthy woman of highest refinements and intellectuality and a physician of ability; that we deeply deplore her untimely demise, and that we extend to the family of the deceased our sincere sympathy in this their great loss.

P. H. Stoops,
T. C. Hays,
A. C. Cluts,
Committee.

On motion of Ray and Hays, the president appointed Drs. Snively and Stoops as a committee to present a revision of the constitution and by-laws of the society at the next meeting.

The president and secretary presented specimen pages of letterhead and envelopes for the society which on motion of Drs. Betts and Hays were adopted as the official paper of the society for the ensuing year, and that the bill be paid by the society.

Application for membership from Dr. W. L. Crouch of Fairview was read and referred to Drs. Snively, Stoops and Scholes as membership committee pro tem, with instructions to report at this meeting.

The committee reported favorably on the application and on suspension of the rules the secretary was instructed to cast the vote of the members present in favor of the election of Dr. Crouch to membership.

The secretary cast twenty votes accordingly and the president declared Dr. Crouch elected to membership.

Drs. Stoops, Scholes, Snively and Betts presented papers per program which were liberally discussed by most of the members present.

The following members were present: Drs. Howard, Stoops, J. E. Coleman, Cluts, T. R. Plumer, Ray, W. D. Nelson, Parks, W. H. Betts, G. S. Betts, Hays, Snively, Adams, Beatty, Scholes, E. W. Reagan, H. H. Rogers, S. A. Oren, Allison and W. L. Crouch and Whitlock.

Adjourned.

D. S. Ray, Secretary.

GREENE COUNTY.

The annual meeting of the Greene County Medical Society was held in Roodhouse Friday, December 11, 1914. Members present: E. E. Jouett, Howard Burns, H. W. Converse, J. J. Ehresmann of Carrollton, C. R. Thomas, H. W. Smith, R. O. Hoathorn, L. O. Hamilton of Roodhouse, C. B. Foreman of Kane, F. N. McLaren, L. O. Frech, E. J. Peek, A. W. Foreman, G. W. Burns, H. C. Campbell, H. A. Chapin of White Hall. Visitors, P. B. Magnuson of Chicago, M. B. Titterington of St. Louis, C. D. Center of Quincy, C. E. Black of Jacksonville, H. R. Bohannon of Jerseyville and W. T. Knox of Manchester.

Meeting was called to order by President F. N. McLaren. The minutes of the previous meeting were read and approved.

Motion made by Dr. Frech and carried that Section 2, Chapter 2 of the by-laws be amended as follows: Bi-monthly meetings shall be held on the second Friday in February, April, June, August, October and December.

The application of Dr. Converse of Carrollton was reported favorably by the board of censors and on

motion of Dr. Burns the secretary was ordered to cast the ballot and he was declared elected to membership.

Election of officers was as follows: President, L. O. Frech; vice-president, C. B. Foreman; secretary and treasurer, H. A. Chapin; censor, three years, C. R. Thomas.

Drs. P. B. Magnuson of Chicago and M. B. Titterington of St. Louis then gave a demonstration on "Some Special Points in the Treatment of Fractures, Operative and Non-operative, Illustrated by Lantern Slides." Dr. Titterington of St. Louis had a large number of x-ray pictures of fractures and demonstrated the ease and accuracy of the diagnosis of the various fractures with the aid of an x-ray, many of which would otherwise not have been discovered, but if neglected would have caused the patient much pain and in many cases ankylosis and loss of function. Dr. Magnuson discussed each picture as displayed and in very concise words outlined the treatment to secure the best functional results. He said that in the past we were satisfied with good functional results, but the use of the x-ray had caused the physician and the patient to demand good anatomical conditions. The use of the Lane plate is being discarded, as it acts as a foreign body, while the ivory plate and screws do not cause any irritation, having the advantage of being readily absorbable, not becoming loose within the fragments, and holding the fractured bones in perfect apposition. Dr. Magnuson does not advise operation in all cases of fractures, but says in many cases it is the only way to secure satisfactory results. The paper was discussed by Dr. Black of Jacksonville, who stated that he was having very nice results in some cases with the use of the spring steel, but commended the ivory plate and screws as probably being an ideal method in operative cases. The paper was further discussed by Dr. Center of Quincy, who made some very interesting remarks.

Dr. Foreman of White Hall moved that the society extend a vote of thanks to the visiting speakers for their most excellent and instructive demonstration. The motion was carried unanimously. The meeting was one of the largest and certainly one of the most interesting and instructive in the history of the society, and all felt more than repaid for their attendance and expressed a desire that we might soon have the pleasure of a return visit from the speakers with a lecture and demonstration on "Sacro-Iliac Dislocation."

H. A. CHAPIN, Secretary.

HENDERSON COUNTY.

The Henderson County Medical Society met at Stronghurst November 10, 1914, at 2 o'clock p. m. The following officers were elected for the ensuing year: Dr. W. J. Emerson, president, Carman; Dr. B. L. Ditto, vice-president, Gladstone; Dr. I. F. Harter, secretary-treasurer, Stronghurst; Dr. E. E. Bond, censor, three years, Stronghurst.

Respectfully,
J. P. RIGGS, M. D.

IROQUOIS-FORD.

The regular annual dinner and meeting of the Iroquois-Ford Medical Society was held at the New Gilman House, Gilman, Ill., December 1, 1914. The following members were present: Drs. O. O. Hall, T. N. Boue, George J. Laben, Chas. S. Mellen, H. R. Struthers, Martha Anderson, L. H. Geiger, R. N. Lane, Horace Gibson, L. C. Diddy, S. S. Fuller, E. E. Hester and D. W. Miller.

After enjoying a most excellent dinner the meeting was called to order by Dr. Lane, the vice-president, the president being absent.

The minutes of previous meetings were read and approved.

On motion Dr. Lester C. Diddy was elected a member.

On motion Paxton was selected as the place for our March meeting and that we return to the former arrangement of holding the four meetings of the year at different places.

The following officers were elected to serve next year: Dr. R. N. Lane, president; Dr. Martha Anderson, vice-president; Dr. D. W. Miller, secretary and treasurer; Dr. L. H. Geiger, censor for three years; Drs. H. R. Struthers and S. S. Fuller were elected first and second alternate delegates to the state society.

Dr. George J. Laben read a paper on "Pyelitis in Children." Dr. O. O. Hall opened the discussion.

Dr. S. S. Fuller read a paper on "A Resume of Literature Showing Infection as the Cause of Hodgkin's Disease, Rheumatism, Endocarditis, Arthritis Deformans, and Ulcer of Stomach." The paper was discussed by Drs. Hall, Gibson and Lane.

Dr. Gibson read paper of Dr. Colteaux on "Metastatic Infection."

Dr. R. N. Lane read a paper on "Puerperal Sepsis," which was discussed by Drs. Boue, Diddy and Fuller.

On motion meeting adjourned.

D. W. MILLER, Secretary.

JASPER COUNTY.

The Jasper County Medical Society met in Newton on December 4, 1914. Present: Drs. Franke, Hutton, Robb, Maxwell, Kittle and Prestley.

Dr. Frank Buckmaster of Effingham gave a very interesting address on "Fractures," illustrated with skiagraphs from his private and hospital cases. Owing to inclement weather the out-of-town physicians were rather sparsely represented.

At the October meeting we had the pleasure of listening to a very able address from our councillor, Dr. E. B. Cooley of Danville.

We are now endeavoring to arouse interest in our members by inviting them to report some of their

everyday cases and when possible bring the patient to the meeting and give all members an opportunity to examine and discuss the case.

JAMES P. PRESTLEY,
Secretary-Treasurer.

MADISON COUNTY.

The annual election of the Madison County Medical Society held at Alton on December 4, 1914, resulted as follows: President, Dr. Lay G. Burroughs of Collinsville; vice-president, Dr. R. D. Luster of Granite City; secretary, Dr. E. W. Fiegenbaum of Edwardsville; treasurer, Dr. R. S. Barnsback of Edwardsville; state delegate, Dr. E. W. Fiegenbaum of Edwardsville; alternate, Dr. Mather Pfeiffenberger of Alton; medico-legal member, Dr. J. B. Hastings of Alton; board of censors, Dr. G. Taphorn of Alton, to serve three years.

E. W. FIEGENBAUM, Secretary.

(The following additional "doings" in Madison county were received from an anonymous source owing, doubtless, to Dr. Fiegenbaum's innate modesty. —Editor.)

At a meeting of the Madison County Medical Society held at Alton December 4, 1914, Dr. E. W. Fiegenbaum of Edwardsville was re-elected secretary of the society for the eighth consecutive year.

Dr. Fiegenbaum was very much surprised when presented with a magnificent electric library lamp from the society for the services rendered the organization during the past seven years. Dr. Lay G. Burroughs of Collinsville made the presentation speech. Dr. Fiegenbaum responded with a speech of appreciation and thankfulness.

The lamp is a very large and fine piece of art. On the base is an inscription which reads: "Presented to Dr. E. W. Fiegenbaum by the Madison County Medical Society in appreciation of services, December 4, 1914."

SHALL MADISON COUNTY HAVE A TUBERCULOSIS COLONY?

W. W. HALLIBURTON, M. D.,
ALTON, ILL.

Mr. President and Gentlemen of the Madison County Medical Society and Madison County Anti-Tuberculosis Society: I have been called on to present to this society the question: Shall Madison county establish a tuberculosis colony I answer, by all means, yes, and will now give a few of the many reasons why it should be done. The type, grade and standard of civilization of every nation, state or community is justly judged by the care and consideration given to their indigent and afflicted poor. Our state laws compel us to protect the community from such contagious diseases as smallpox, scarlet fever and diphtheria by quarantine, but, strange to say, tuberculosis, which is equally contagious and causes more deaths than all the other contagious diseases combined, is allowed to go unrestrained, apparently, simply because the tuberculosis contagion is slow and insidious in its attack and progress. While, in fact, the laws of contagion should be just as rigidly enforced in tuberculosis as in other contagious diseases, we cannot do this unless the county will provide proper facilities and means for handling and housing those poor and unfortunate persons. In the early stage of the infection they receive practically no treatment and are left in close and intimate association with relatives and friends, thus sowing and implanting this most insidious and remorseless of all contagious diseases, often before it is even recognized. And even after it is recognized this close family relation is continued from necessity until the patient has become helpless and the necessities of the family compel them to ask the county to take charge of the case, which is then beyond the hope of any medical treatment. Now this is not as it should be, for by nation-wide education as to how tuberculosis should be handled and isolated it could in time be eradicated. Therefore it behooves Madison county to awake from her long sleep and indifference and assume her share and obligations in this nation-wide war on tuberculosis. In the state of Pennsylvania every county has established a free tuberculosis colony, where any person living in the county can have, free of cost, a home and the best of medical treatment, or if they prefer they can go there and receive treatment, go home and return for treatment, as the doctor may direct. This is as it should be and is eminently worthy of emulation by every county in the great state of Illinois.

MORGAN COUNTY.

Meeting October 15, 1914.

A joint meeting with the Morgan County Dental Society was held at the Dunlap House, Jacksonville, October 15, 1914. After dinner President J. C. Widenham of the Dental Society introduced Dr. Herbert A. Potts of Chicago, who gave a most valuable address on "Mouth Infections in Relation to Systemic Conditions." Following the address, he exhibited a number of skiagraphic films, demonstrating oral pathology. Twenty-one doctors and twelve dentists attended the dinner and address.

Meeting November 28, 1914.

The annual dinner was held at the Peacock Inn, Jacksonville. Dr. Charles L. Mix of Chicago was the guest of honor and spoke after dinner on "Symptomatology and Differential Diagnosis of Gastric and Duodenal Ulcer and Biliary Tract Infection."

Dr. Mix in speaking of duodenal ulcer mentioned its history of "neurasthenia," spring and fall recrudescences, the pain, tenderness and hemorrhage; negative symptoms of absent icterus unless ulcer is at papilla and blocking the common duct exit, no colicky pain, no infection signs, no vomiting unless perforation, no leucocytosis. Seventy-five per cent of cases show hyperacidity.

Consideration of gastric ulcer: Patients are comfortable for longer periods. Some cases may have

only a single attack. They usually suffer a considerable loss in weight. Pain occurs soon after eating. Tenderness is usually in an area about the size of a quarter and in epigastrium in middle line. Hemorrhage, usually a good sized one, which, if acid, strongly points to gastric ulcer. Occult blood in stomach contents is not of much value in making this diagnosis. It is possible to make double diagnosis of duodenal and gastric ulcer in same individual.

Biliary tract infection: Fifty-two per cent of cases have typhoid history. Puerperal infections and appendicitis furnish etiological diagnosis for a certain fraction of cases. Colic, plus icterus, indicates a moving body in the tract. A gradually developing icterus, sans colic, should make one suspect a neoplasm; infection signs present; no blood in stools or stomach contents, as a rule; temperature increases and colic occurs when the peritoneum is irritated.

Dr. Mix's presentation was discussed by Drs. Cole, Deal, Adams, Hairgrove, Milligan, Hardesty, Franken, Reid and Stacy.

Thirty-six attended the dinner and address.

Meeting December 10, 1914.

A meeting was held at the Medical Library, Jacksonville. The annual reports of officers were read, after which the following were elected to serve the society next year: President, Dr. George H. Stacy; vice-president, Dr. G. R. Bradley; secretary, Dr. T. G. McLin; treasurer, Dr. A. L. Adams; librarian, Dr. Carl E. Black; censor, three years, Dr. H. C. Woltman, all of Jacksonville.

GEORGE H. STACY, Secretary.

THE NORTH CENTRAL ILLINOIS MEDICAL ASSOCIATION.

Forty-first Annual Meeting at Wenona, Ill., December 1 and 2, 1914.

Sixty physicians were in attendance and sixteen new members were added to its rolls.

An interesting program was carried out, which included a six o'clock dinner at Hotel Stanton given by the local medical profession, followed at 7:30 p. m. by public exercises at the Presbyterian church. These consisted of the annual address of the president, Dr. George A. Dicus, subject, "The Physician and the Surgeon," the conferring of life membership certificates for twenty-five consecutive years of service in the association upon Drs. James Wiley Pettit of Ottawa, George Allen Dicus of Streator, Thomas Henry Trainor of Barrington and Thomas Wilson Burrows of Ottawa by Dr. Charles D. Thomas of Peoria, first vice-president; an address by Dr. Albert L. Brittin of Athens, president of the Illinois State Medical Society, relative to the welfare of the profession and medical organization throughout the state of Illinois, and a most able and admirable general public address on "Adjustment, the Law of Organic Life," by Dr. Frank P. Norbury of Springfield.

The meeting was full of interest and value to all who were able to attend the sessions. This association, after more than two-score continued years of service to the medical profession of its locality, has now come to be one of the older and long active district medical organizations of the state.

One the close of its program of exercises on the second day it adjourned to meet at Peoria in 1915 under the direction of the following officers: President, Dr. Chas. D. Thomas, Peoria; first vice-president, Dr. James A. Marshall, Pontiac; second vice-president, Dr. Frederick W. Wilcox, Minonk; secretary and treasurer, Dr. George A. Dicus, Streator.

WM. O. ENSIGN,
Ex-Secretary.

OGLE COUNTY.

The regular meeting of the Ogle County Medical Society was held in the opera house, Forreston, October 21, at 1:30 p. m. President Stevens not being present, Vice-President Griffin called the meeting to order. Minutes of previous meeting read and approved. Roll call found the following members present:

Drs. Beveridge, Brown, Beard, Brigham, Houston, Hanes, Johnston (Byron), Johnston (Rochelle), Gardiner, Kittler, Kretsinger, Griffin, Juks, McEachren, Akins, Roe and Overfield.

Visitors present: Drs. J. F. Percy, Galesburg; Karl Snyder, Freeport; C. W. McPherson, Hazelhurst; B. A. Arnold, Freeport; W. B. Stiver, Freeport, and Miller, German Valley.

Program: Dr. J. F. Percy of Galesburg read a very interesting paper on the "Use and Success of the Thyroid Treatment in Bright's Disease." The doctor cited many cases that had received permanent cures and others that had been greatly benefited.

Dr. Karl Snyder of Freeport gave an interesting talk on "Some Observations of Surgery" seen while on his recent trip to Europe. "Iodine is not used in hospital practice as it is used in this country. Antiseptic surgery is on the decline in many hospitals and radium is used more extensively in cancerous condition of the stomach."

On motion of Dr. Killer that the next meeting be held at Rochelle; carried.

On motion of Dr. Beard that we give a vote of thanks to Drs. Percy and Snyder for their able papers; carried.

Adjourned to meet at Rochelle in February, 1915.

DR. J. T. KRETSINGER,
Secretary.

THE PEORIA CITY MEDICAL SOCIETY.

New officers elected December 15, 1914: President, C. D. Thomas; first vice-president, J. F. Cooper; second vice-president, O. J. Roskoten; secretary and treasurer, E. W. Oliver; censor, A. L. Corcoran; delegate (1915-16), M. S. Marcy; members legislative committee, W. R. Allison and E. E. Barbour; banquet (annual) committee, J. E. Huber, R. A. Kerr, E. E. Gelder.

Society thriving, 145 members, attendance aver-

age 47.6. (Average three years ago, 25.) Largest attendance, 127. Twenty meetings each year, first and third Tuesdays.

ROCK ISLAND COUNTY.

Rock Island County Medical Society held a regular meeting at New Harper Hotel, Rock Island, on Tuesday, December 8, 1914. Present: Members, Seids, Snively, Hollowbush, Crooks, Beam, Lachner, Williams, Love, Craig, West, Beck, Sargent, Eddy, Souders, Long, Leipold, Miller, R. B., Chapman, Sala, Ostrom, Norman, Eyster, Bernhardi, Jr., Conroy, Robb, Barding, De Silva, Littig (28). Visitors: Wahlberg, Miss Peterson, J. V. Littig, Bendixen Donohoe, Ridlon (6).

Minutes of October meeting heard and approved. Order of business reversed to make scientific session the first of the program. Dr. John Ridlon of Chicago favored the society with a most profitable "Consideration of Recent Methods in the Treatment of Potts' Disease," the talk being illustrated with case pictures through the co-operation of Dr. Littig, who supplied and operated lantern. A maximum of interest was aroused.

Business session followed a rising vote of thanks to Dr. Ridlon. Dr. F. J. Conroy was elected to membership. Dr. T. J. Flatley was voted to membership upon presentation of transfer card from Langlade County, Wisconsin Society. Application of Dr. W. K. Wahlberg was read and committee appointed. A letter was read from the secretary of Scott County, Iowa, society proposing a joint meeting to be held in June next and a committee with power to act was appointed upon carried motion. Invitation of the Scott County Society to attend a meeting on the 17th inst., at which Dr. F. A. Cook is to be the speaker of the evening, was accepted. Dr. Ostrom, at the request of Postal employes, presented a petition of theirs relative to Congressional H. B. No. 5139. Petition granted. A proposed by-laws amendment, adding a section 10 to chapter 1, and providing for life membership, was read and laid over.

Adjourned until February.

W. D. CHAPMAN,
Secretary.

VERMILION COUNTY

The Vermilion County Medical Society met on December 14, 1914, at the Elks dining room, Danville, Ill. The state president, Dr. A. L. Brittin, was with us and a banquet was given in his honor.

The program of the evening consisted of papers by Dr. C. E. Brown of Rossville on "Pneumonia," and Dr. J. M. Guy of Danville on "Pleurisy." Both were freely discussed. State President Brittin gave a very interesting talk.

The following officers were elected for the ensuing year; President, Dr. Solomon Jones, Danville; vice-president, Dr. J. M. James, Henning; secretary-treasurer, Dr. O. H. Crist, Danville; censor, Dr. R. A. Cloyd, Catlin; delegate to state meeting, Dr. R. A. Cloyd, Catlin; alternate, Dr. S. C. Glidden, Danville.

Forty members were present.

O. H. CRIST, Sec'y.

Personals

Dr. Frank A. Stahl, Chicago, has returned after five months abroad.

Dr. William P. Sherman, Aurora, was operated on for appendicitis, December 9.

Dr. George D. Hauberg, Moline, has been appointed official deputy coroner of Rock Island county.

Dr. Albert N. Mueller has been appointed city physician of Rock Island, vice Dr. George G. Craig, resigned.

Dr. James P. Prestley, Newton, has recently been appointed as examining surgeon on the U. S. Pension Board.

Dr. J. Lenne Aleshire, Plainville, was painfully injured in a collision between his automobile and a street car in Quincy, December 4.

Frank M. Elliott, president of the Evanston Hospital Association, after nineteen years of service, has resigned on account of ill health.

Dr. Enos S. Spindel, Springfield, has been appointed a member of the State Board of Health, vice Dr. James J. Hassett, McLeansboro, deceased.

Dr. D. Hally Smith of Paris, France, who has been visiting his parents in Newton, has recently returned to France to engage in surgical work with the French army.

Dr. George W. Mahoney was elected vice-commander and Dr. Frank P. St. Clair, surgeon, of the Veteran Corps of the Seventh Infantry, Ill., N. G., at its third annual meeting, December 19.

Charles P. Horner, M. D., Tampico, Illinois, has sold his Tampico practice to Dr. R. H. Wilson, ex-interne of the West Side Hospital, and intends to take one year of special work in diagnosis and internal medicine in Chicago.

News Notes

—The Compton Hospital was reopened December 3. It is now under the management of Dr. Clarence G. Pool.

—The chief of police, on December 8, issued instructions for the arrest of any one distributing sample packages of medicine.

—A resolution indorsing a petition before the city council to establish zones of quiet around hospitals, was adopted at a meeting of the council of the Chicago Medical Society, December 8.

—A hospital to be used exclusively for tuberculosis patients is to be erected at Collinsville by Dr. Moses W. Harrison, who now conducts a private hospital and tuberculosis colony at that place.

—The Visiting Nurses' Association has issued an especial appeal for funds and announces that if the general public does not come to its aid many of its patients among the sick poor of the city will die from lack of nursing care.

—*The Dietetic and Hygienic Gazette* has been purchased by *Critic and Guide Company*, and will be combined with the latter under the editorship of Dr. Wm. J. Robinson at 12 Mt. Morris Park W., New York City.

—The Illinois State Association for the Prevention of Tuberculosis and the other antituberculosis associations of the state are endeavoring this year to realize sufficient funds from the sale of Red Cross seals to pay for the services of a nurse in each community in the state.

—Plans for the buildings for the State Colony for Epileptics, Dixon, have been prepared and bids for their construction have been asked for. The buildings consist of an administration building with three wings; dining halls and a service kitchen and a dormitory building to accommodate 52 persons. The dormitory cottages are to be built in groups of four around the main buildings.

—The following women physicians of Chicago have offered to give their services free to working women and also to help in the municipal dance halls. Drs. Sadie B. Adair and Lindsay Wynekoop have been assigned to the south side dance halls; Drs. Blanche Bergman and Agnes Mikkelsen to those on the west side, and Drs. Effie L. Lobdell and Clara P. Seippel to the north side dance halls.

—An increase in the typhoid cases in the area supplied by the Chicago Avenue pumping station caused an investigation that disclosed some typhoid carriers repairing one of the wells and a small stream of unknown origin and carrying colon bacilli was discovered. The *Bulletin* of December 19 advised people in that district to boil their water—a notice that has rarely appeared since the drainage canal has been in commission.

—Dr. James W. Pettit and associates, Ottawa, announce that the Illinois Valley General Hospital will be built on the South Bluff, west of the Ottawa Tent Colony, during the next year, at an expenditure of from $50,000 to $75,000. The first three buildings are to be the administration building which will be flanked on either side by an annex connected by corridors. Especial attention is to be given to the open-air treatment, and all classes of ailments will be treated at the institution.

—Contributors to the JOURNAL will expedite publication by sending all *original articles* to Dr. Clyde D. Pence, Editor, 3338 Ogden Avenue, and *society proceedings* to Dr. Henry G. Ohls, managing editor, 927 Lawrence Avenue. A blank reprint order with price list is mailed with each author's proof and if reprints are desired the order blank should be filled out and returned with check and the proof. After the JOURNAL is printed all type for which a reprint order has not been received is destroyed.

—The directors of the Fenger Memorial Fund announce that $600 have been set aside for medical investigation in 1915. The money will be used to pay all or part of the salary of a worker, the work to be done under direction in an established institution, which will furnish the necessary facilities and supplies free of cost. It is desirable that the work undertaken should have a direct clinical bearing. Applications giving full particulars should be sent to L. Hektoen, 629 So. Wood St., Chicago, before January 15, 1915.

—*The Effingham County Physician* for December, with its twelve pages of medical news and comment, is decorated with a "post card picture" of St. Anthony's Hospital at Effingham. It also contains a list of members with figures indicating the number of meetings attended by each and stars showing who took part in the programs. The excellent quotations from a great variety of sources indicate that the editor has a large exchange list and can spot the items of interest and value to his readers. Such a live publication must be a source of help and inspiration to the society.

—The Chicago Polish Medical Society held its yearly meeting at La Salle Hotel, December 18, 1914, and elected the following officers: Dr. W. Kuflewski, president; Dr. T. Z. Xelowski, vice-president; Dr. S. Boguszewski, treasurer; Dr. A. Pietrzykowski, secretary. Executive committee: Dr. M. Stupnicki, Dr. R. Ostrowski, Dr. L. Tabenski.

Adopted resolution to aid the orphans and widows of Polish doctors in Poland and open the subscription. Any one desiring to contribute for the cause may send their contribution to the secretary of the Chicago Polish Medical Society, Dr. A. Pietrzykowski, 866 Milwaukee Ave.

—The City Club of Chicago, 315 Plymouth Place, installed an extensive public health exhibit November 30—January 16, to which the Chicago Health Department, the Illinois State Board of Health, Infant Welfare Society, Chicago Tuberculosis Institute, American Medical Association and other organizations contributed extensive materials in the form of placards, charts, models, etc., that occupy four floors of the clubhouse. Numerous conferences are being held with experts on all phases of health work. School hygiene, infant welfare, sanitation, food adulterants, the tuberculosis campaign and patent medicine evils, all receive detailed illustrations. A demonstration of the health needs of the city to the finance committee of the council at one of the sessions was an important feature of the exhibit. It is well worth an extended visit and study.

—The Civil Service Commission of Cook County will hold an examination, Jan. 21, 1915, for the position of director of the Juvenile Psychopathic Institute, open to all physicians in the United States. The position will pay $5,000 a year. The director is required to make thorough physical and mental examinations of the delinquent and dependent children referred to the institute by the Juvenile Court and must interpret the tests and advise the judge in the proper disposition of the cases. The position requires experience in psycopathic work as well as in nervous and mental diseases. Applications for the examination should be secured from the commission, Room 547 County Court House, before the date of the examination.

Marriages

Robert Emmett Flannery, M. D., to Miss Mary Kearns Black, both of Chicago, November 11.

Charles Patton Blair, M. D., Monmouth, Ill., to Miss Lena Blanche Wilson of Des Moines, Ia., October 10.

Mary Catherine Couch, M. D., Chicago, and Mr. Thomas T. Mora of Fajardo, P. R., at Rio Piedras, P. R., November 19.

Franklin Bennett McCarty, M. D., to Miss Mary Bryan, both of Chicago, October 31.

S. A. Weiss, M. D., to Miss Gertrude C. Marblestone, both of Chicago, December 6.

Deaths

Allan Aleyne Mathews, M. D. Rush Medical College, 1879; of Oak Park, Ill.; died November 19, aged 61.

Charles M. Eaton, M. D. Medical College of Indiana, Indianapolis, 1878; died at his home in Robinson, Ill., September 10, from nephritis, aged 68.

James R. Seymour, M. D. Eclectic Medical Institute, Cincinnati, 1883; died at his home in Raymond, Ill., November 28, from cerebral hemorrhage, aged 65.

Pierce Tyrrell, M. D. Eclectic Medical Institute, Cincinnati, 1866; one of the oldest practitioners of Illinois; died at his home in Elgin, November 19, aged 85.

Harvey M. Dally, M. D. Medical College of Indiana, Indianapolis, 1881; a physician and druggist of Pontiac, Ill.; died at his home in that place, November 29, aged 59.

William H. Hall, M. D. Eclectic Medical Institute, Cincinnati, 1870; died at his home in Havana, Ill., October 30, a short time after a surgical operation performed in Chicago, aged 74.

Ira John Schott, M. D. Hahnemann Medical College, Chicago, 1887; of Naperville, Ill.; died suddenly from heart disease in that place, November 21, aged 54.

Isaac Moore, M. D. St. Louis Medical Col-

lege, 1870; for many years a practitioner of Alton, Ill.; died in the Deaconess Hospital, St. Louis, November 19, after a surgical operation, aged 67.

CHARLES H. MORDOFF, M. D. Chicago Homeopathic Medical College, 1881; Hahnemann Medical College, Chicago, 1905; a member of the Illinois State Medical Society; died at his home in Genoa, Ill., November 16, from cerebral hemorrhage, aged 58.

JOSIAH CLAIRE VIOLET, M. D. Northwestern University Medical School, Chicago, 1910; a Fellow of the American Medical Association and formerly a resident of Chicago; died in Pomona, Cal., where he had gone in search of health, November 22, aged 32.

SIMON PRESTON BROWN, M. D. Rush Medical College, 1869; for more than forty years a practitioner of Elgin, Ill.; died at his home in that city, November 7, from senile debility, aged 82. At his funeral eight physicians of Elgin served as active pallbearers.

ANDREW CURSENA GREGG, M. D. Starling Medical College, Columbus, Ohio, 1901; formerly of St. Mary's and Brookville, Pa., but more recently a resident of Chicago; died in the Englewood Hospital, November 2, from uremia, aged forty-five.

NEW AND NON-OFFICIAL REMEDIES.

Since publication of New and Non-Official Remedies, 1914, the following articles not previously described have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Non-Official Remedies":

During November the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Antiseptic Supply Co.: Cupric Applicators.

Laboratory of W. T. McDougall: Pasteur Antirabic Vaccine.

H. K. Mulford Co.: Solution Pituitary Extract.

Radium Company of America: Radium Bromide, Radium Chloride, Radium Sulphate.

Standard Chemical Company: Radium Carbonate.

Clinical Evidence: In view of the unsatisfactory evidence for the therapeutic value of articles proposed for inclusion with New and Non-Official Remedies, the Council adopted the following statement:

"Claims are often made, however, which are incompatible with common experience and sometimes defy the laws of Nature. Claims which seem highly improbable will not be admitted by the Council unless the manufacturer supports them by evidence acceptable to the Council. In doubtful cases the Council acts on these questions under the advice, and with the cooperation, of its staff of clinical consultants."

Change of Formula. In view of information received from the Antiseptic Supply Company the Council has modified the description of Supric-sticks to indicate that these are tipped with a mixture of copper sulphate, alum and potassium nitrate, containing 20-25 per cent of copper sulphate.

Pituitary Liquid. Armour & Company have informed the Council that its Pituitary Liquid is adjusted to uniform strength by the method of G. B. Roth (Jour. of Pharm. and Exper. Thera., July, 1914). The description of Pituitary Liquid, Armour, has been revised to indicate this.

Concentrated Diphtheritic Antitoxin: Marketed in syringe packages containing from 500 to 7,500 units. F. Stearns & Co., Detroit, Mich.

Bacillus Coli Communis Vaccine: Marketed in boxes of 6 ampules. E. R. Squibb & Sons, New York City.

Staphylo-Acne Vaccine: Marketed in boxes of 6 ampules. E. R. Squibb & Sons, New York City (Jour. A. M. A., Nov. 14, 1914, p. 1763).

Pyocyaneus Vaccine: Marketed in boxes of 6 ampoules. E. R. Squibb & Sons, New York City.

Streptococcus Vaccine: Marketed in boxes of 6 ampoules. E. R. Squibb & Sons, New York City.

Friable Tablets of Emetine Hydrochloride, Mulford: Each tablet contains emetine hydrochloride 0.032 Gm. H. K. Mulford Company. Philadelphia, Pa.

Antirabic Vaccine: Consisting of eighteen doses, one dose is sent by mail daily. Pasteur Institute of St. Louis, St. Louis, Mo.

Typhoid Vaccine, Immunizing: Marketed in packages of three syringes and in packages of three ampoules. H. M. Alexander & Company, Marietta, Pa. (Jour. A. M. A., Nov. 28, 1914, p. 1953).

The present outbreak of foot and mouth disease among the cattle at the Union Stock Yards and also on farms in various parts of a number of states adjacent to Chicago serves to emphasize the importance of efficient pasteurization.

This disease is transmissible to man, especially to children, by means of milk, but the danger is entirely removed by pasteurization.

At the present time the disease, as far as we can learn, affects only a very small fraction of the territory supplying milk to the Chicago market. There is consequently not the slightest occasion for any popular hysteria on the subject of the milk-supply. About 82

per cent of the milk now sold in the city is pasteurized. If the public will confine its purchases of milk to that which comes from plants supplied with properly installed and properly operated pasteurizing equipment, they need not concern themselves about the danger of infection.

There is no danger of transmission by means of meat or meat products.—*Bulletin Chicago Department of Health.*

Ventilation, in a word, is simply taking good air in and letting bad air out.

Book Notices

CHILD TRAINING AS AN EXACT SCIENCE, by George W. Jacoby, M. D. With full bibliography and thorough index. 384 pages, 15 full-page illustrations. $1.50, net; by mail, $1.62. Funk & Wagnalls Company, Publishers, New York.

No more important subject can be the object of a book than the one Dr. Jacoby has chosen. Upon the training of the child of today depends the stability of the nation for another generation and, in considerable measure, for other generations to come.

The book was written for the instruction of the teacher, the parent, and the physician. It will be of most value to the teacher.

In the introduction the author says: "But it can be proved by convincing evidence that many of the failures of pedagogy could be avoided, many a child considered uneducable could be trained to become a useful member of society, if those who have control of its education and training, at home and in school, the parents and teacher, would earnestly endeavor to find the key to the individuality of their ward."

There can be no doubt that the physician and the pedagogue should work in closer relation than has been the custom—more particularly is this true when educating defective children, and the author points the way in which such union of effort will be most effective. The book deals largely with the psychological training of backward children.

ABDOMINAL OPERATIONS. New (3rd) edition, enlarged two volumes.

ABDOMINAL OPERATIONS. By Sir Berkeley Moynihan, M. S. (London), F. R. C. S., Leeds, England. Third edition, entirely reset and enlarged. Two octave volumes totaling 980 pages, with 371 illustrations, five in colors. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, $10.00 net; half morocco, $13.00 net.

The work of Dr. Moynihan is so well known in this country that his text on abdominal operations needs no recommendation. The books describe in detail only their operations and methods as practiced by the author—giving in this way his personal opinions, methods and results. Only operations common to both sexes are described. No operations upon the bladder nor pelvic organs are described and none of the various hernia operations. The text is supplemented by numerous illustrations, the character of which are excellent, and add greatly to the value of the work. The volumes will be a valuable addition to your library of surgery.

The Saunders Company are to be congratulated upon the mechanical make-up. The volumes make a handsome showing for the publisher.

THE CANCER PROBLEM, by William Seaman Bainbridge, A. M., Sc. D., M. D., Professor of Surgery, New York Polyclinic Medical School and Hospital; Surgeon and Secretary of Committee of Scientific Research, New York Skin and Cancer Hospital; Consulting Surgeon, Manhattan State Hospital, Ward's Island; Honorary President, First International Congress for the Study of Tumors and Cancers, Heidelberg, 1906. The Macmillan Company, 66 Fifth Avenue, New York. 1914. Price, $4 net.

The Macmillan Company has recently issued this volume by Dr. William Seaman Bainbridge on The Cancer Problem. No question is of more importance nor interest than this, and Dr. Bainbridge has given the last word on this malady.

The deaths from cancer among civilized peoples are estimated at half a million annually and are increasing rapidly.

The author does not claim to have solved the problem nor to have brought out some new operative procedure, but he does tell what has been done and learned, and what results treatment has effected.

The book discusses the various theories of cancer; has emphasized facts, and reviews the work and opinions of other men who have studied the cancer problem.

The book should be read by every doctor, either surgeon or internist, and by all public health lecturers. The volume contains a large bibliography, which is of great value to those who are studying the literature of cancer. We recommend it to the profession.

A MANUAL OF BACTERIOLOGY, Clinical and Applied, by R. Tanner Hewlett, M. D., F. R. C. P., D. P. H. (London), Professor of Bacteriology in the University of London; Director of the Bacteriological Department, King's College, London; Director of Pathology, Seamen's Hospital, Greenwich; Lecturer on Bacteriology, London School of Tropical Medicine. Fifth edition. C. V. Mosby, St. Louis.

A review of a text-book on bacteriology that has reached its fifth edition since 1898, seems almost unnecessary, especially when written by such an authority as Dr. Hewlett, except for the fact that much new matter has been added and the entire work has been revised.

Ample space has been given to the side-chain theory and immunity reactions and which have been extended. The newer theories on anaphylaxis are inserted. Changes and added space of considerable degree have been given to the streptococci, anthrax, tubercle, and leprosy bacilli, typhoid fever and cholera; in fact, every new matter that could be added and every revision possible to make have been made. It is a manual whose 650 odd pages show the work of an authority. The book can be strongly recommended as an up-to-date work on bacteriology.